

January 2012

# Does Inclusion of a Disclaimer versus Warning Reduce the Effects of Exposure to Thin-Ideal Media Images on Body Dissatisfaction and Intent to Diet?

Rheanna Nichole Ata

University of South Florida, rata@mail.usf.edu

Follow this and additional works at: <http://scholarcommons.usf.edu/etd>

 Part of the [American Studies Commons](#), and the [Clinical Psychology Commons](#)

## Scholar Commons Citation

Ata, Rheanna Nichole, "Does Inclusion of a Disclaimer versus Warning Reduce the Effects of Exposure to Thin-Ideal Media Images on Body Dissatisfaction and Intent to Diet?" (2012). *Graduate Theses and Dissertations*.  
<http://scholarcommons.usf.edu/etd/3958>

This Thesis is brought to you for free and open access by the Graduate School at Scholar Commons. It has been accepted for inclusion in Graduate Theses and Dissertations by an authorized administrator of Scholar Commons. For more information, please contact [scholarcommons@usf.edu](mailto:scholarcommons@usf.edu).

Does Inclusion of a Disclaimer versus Warning Reduce the Effects of Exposure to Thin-Ideal Media Images on Body Dissatisfaction and Intent to Diet?

by

Rheanna N. Ata

A thesis submitted in partial fulfillment  
of the requirements for the degree of  
Master of Arts  
Department of Psychology  
College of the Arts and Sciences  
University of South Florida

Major Professor: J. Kevin Thompson, Ph.D.  
Paul B. Jacobsen, Ph.D.  
Jamie Goldenberg, Ph.D.

Date of Approval:  
November 29, 2011

Keywords: Body image, social comparison, advertisements, magazines, air-brushing, models

Copyright © 2011, Rheanna N. Ata

## Table of Contents

List of Tables .....	iii
List of Figures .....	iv
Abstract .....	v
Introduction .....	1
Sociocultural and Social Comparison Theories .....	2
Link between Media Exposure and Body Dissatisfaction .....	4
Link between Media Exposure and Dieting Behaviors .....	7
Adverse Outcomes Associated with Body Dissatisfaction and Dieting Behaviors .....	9
Measures Aimed at Reducing the Impact of the Media .....	9
Media literacy .....	9
Air-brushing education .....	10
Downward social comparisons .....	12
Inclusion of “real” women in advertising .....	13
Banning of ultra-thin women from modeling .....	13
Media activism and banning of advertisements .....	14
Inclusion of disclaimers in advertising .....	15
Disclaimers versus Warnings .....	16
Use of Warning Labels in other Areas of Marketing and Advertising .....	17
Cigarette warnings .....	17
Alcohol warnings .....	18
Increasing the effectiveness of warning labels .....	19
Current Study .....	20
Method .....	22
Participants .....	22
Measures .....	23
Magazine advertisements .....	23
Messages .....	23
Body dissatisfaction .....	24
Internalization of the thin-ideal .....	25
Social comparison .....	26
Distraction task .....	26
Dieting .....	26
Magazine usage .....	27
Consumer questionnaire .....	27

Message rating form .....	27
Demographic information .....	28
Procedure .....	28
Results.....	31
Preliminary Analyses .....	31
Attention and manipulation checks.....	31
Descriptive statistics .....	32
Correlational analyses .....	34
Primary Analyses .....	35
Body dissatisfaction .....	35
Intent to diet .....	39
Moderation Analyses .....	40
Exploratory Analyses.....	42
Discussion .....	45
Limitations .....	47
Future Directions .....	50
Implications and Conclusions .....	52
References .....	54

## List of Tables

Table 1: Participant Descriptive Characteristics and Demographic Information .....	33
Table 2: Means and Standard Deviations for Pre-Exposure Trait and Outcome Variables .....	34
Table 3: Correlations among Trait, State (VAS), and Outcome Variables .....	36
Table 4: Correlations between Pre- and Post-Exposure Visual Analog Scale (VAS) Scores .....	37
Table 5: Analysis of Covariance (ANCOVA) for Post-Exposure Body Dissatisfaction by Group.....	38
Table 6: Covariate Adjusted Means, Standard Errors, and Confidence Intervals for Post-Exposure Body Dissatisfaction by Group.....	39
Table 7: Analysis of Covariance (ANCOVA) for Intent to Diet by Group.....	40
Table 8: Trait Body Dissatisfaction Moderator Analysis .....	41
Table 9: Physical Appearance Comparison Moderator Analysis .....	41
Table 10: Internalization of the Thin-Ideal Moderator Analysis .....	42
Table 11: Summary of Analysis of Variance (ANOVA).....	43
Table 12: Pairwise Comparisons for Group by Time Interaction.....	44

## List of Figures

Figure 1: Pre- and post-exposure body dissatisfaction by group .....	44
--	----

## Abstract

The relationship between exposure to media images of ultra-thin models and body dissatisfaction has been documented in numerous correlational and experimental studies. Given the association between body dissatisfaction and negative outcomes such as eating disorders, prevention and intervention programs have sought to minimize the effects of the media on body dissatisfaction by, for example, providing education on the air-brushing techniques used to enhance the thinness of models depicted in advertisements. More recent efforts in Britain and France include the proposal of legislation that would require advertisements featuring hyper-thin models to include a disclaimer. To determine whether the inclusion of a disclaimer versus a warning message would decrease the effects of exposure to such magazine advertisements on body dissatisfaction and intent to diet, female undergraduate students ( $N = 283$ ) were randomly assigned to one of four groups: (1) disclaimer, (2) warning, (3) model control, (4) car control. Those in the experimental groups were exposed to advertisements edited to include either a disclaimer (i.e., “Retouched photograph aimed at changing a person’s physical appearance.”) or warning (i.e., “Warning: Trying to look as thin as this model may be dangerous to your health.”); those in the model control group were exposed to the original, untouched advertisements, and those in the car control group viewed car advertisements. Results revealed a significant, but unexpected, effect of group on post-exposure body dissatisfaction. The car control group reported significantly lower post-exposure body dissatisfaction than the disclaimer, warning, and model control groups. The effects of

exposure to magazine advertisements on intent to diet did not differ by group. Potential moderating roles of trait body dissatisfaction, physical appearance comparison, and internalization of the thin-ideal are examined. Implications, limitations, and future research ideas are discussed.



## Introduction

Mass media come in many forms (i.e., television, movies, newspapers, magazines, radio, internet, video games, etc.) and serve an educational function in contemporary society, keeping us up to date on the news and the latest music and fashion trends. Media usage is fairly heavy among youth, and they often turn to it to help them deal with issues associated with their changing bodies and identities. Advertisers are well-aware of the significant role the media play in the lives of Americans, spending over \$200 billion a year on advertising (Kilbourne, 1999). And this is not because they expect their advertisements to go unnoticed. The average American devotes 6-8 hours a day to media (Roberts, 2000), sees more than 3,000 advertisements per day, and spends more than 3 years of his/her life watching commercials (Kilbourne, 1999).

The power of the media lies in their ability to influence, reflect, and reinforce social norms, attitudes, and beliefs about weight and physical appearance (Thompson, Herbozo, Himes, & Yamamiya, 2005). In a study on the impact of media on girls' body image, 69% of participants reported that magazine pictures influenced their idea of the perfect body shape, and 47% reported that such pictures made them want to lose weight (Field et al., 1999). Although the average American woman is 5'4", 141 pounds (Strasburger & Wilson, 2002), adolescent girls asked to describe the "ideal" teenage girl reported that she would be 5'7", 100 pounds, and size 5, with long blond hair and blue eyes (Nichter & Nichter, 1991). Not surprisingly, this "ideal" is consistent with the

images of unrealistically thin, physically attractive women portrayed in Western media (Cusumano & Thompson, 1997).

The thin-ideal portrayed by the media has been getting increasingly thin over time (Silverstein, Perdue, Peterson, & Kelly, 1986; Sypeck, Gray, & Ahrens, 2004; Wiseman, Gray, Moismann, & Ahrens, 1992). In 1980, researchers examined changing perceptions of the ideal female body, as represented by body measurements of Miss America contestants and centerfold models featured in *Playboy* magazine from 1959-1978 (Garner, Garfinkel, Schwartz, & Thompson, 1980). Even though the average American woman had increased in weight over the 20-year period, results revealed a trend toward increasing thinness, as evidenced by decreases in bust and hip measurements over time. A more recent follow-up study examined body measurements of Miss American contestants and *Playboy* centerfolds from 1979-1988 (Wiseman et al., 1992). Sixty-nine percent of *Playboy* centerfold models and 60% of Miss America contestants weighed at least 15% less than expected, given their height (Wiseman et al., 1992). This finding is particularly disconcerting, given that maintenance of a body weight less than 85% of that expected is one of the diagnostic criteria for anorexia nervosa (American Psychiatric Association [APA], 2000).

### **Sociocultural and Social Comparison Theories**

Sociocultural theories of body image disturbance “examine the influence of common or culture-wide social ideals, expectations, and experiences on the etiology and maintenance of body image disturbance” (Heinberg, 1996, p. 32). The Tripartite Model, in particular, suggests that three sociocultural sources of influence—parents, peers, and media—influence body dissatisfaction both directly and via the mediational processes of

appearance comparison and internalization of the thin-ideal (i.e., incorporation of societal expectations of attractiveness into one's self-concept; Kearney-Cooke, 2004). Body dissatisfaction, in turn, is linked to disordered eating in the forms of restriction and bulimia. Additionally, the model includes a proposed directional link from restriction to bulimia, which is linked to psychological functioning (e.g., self-esteem, depression). Support for the Tripartite Model has been provided by a series of structural equation modeling (SEM) studies using adults and adolescent girls (Keery, van den Berg, & Thompson, 2004; Shroff & Thompson, 2006; van den Berg, Thompson, Obremski-Brandon, & Covert, 2002).

The mediational process of appearance comparison in the Tripartite Model can be conceptualized as a more specific form of what Festinger (1954) termed social comparison. According to Social Comparison Theory (Festinger, 1954), most of what we know about ourselves comes from social comparisons. To derive information about ourselves and determine where we stand in terms of intelligence or attractiveness, for example, we compare ourselves to others (e.g., family members, peers, celebrities). Researchers differentiate between two types of social comparisons: upward and downward. When one compares him/herself to others who are considered to be superior on the attribute of interest, they are said to be engaging in an upward comparison; comparison to others who are perceived as inferior is referred to as downward comparison. Meta-analytic results suggest that engaging in appearance-related social comparison is related to higher levels of body dissatisfaction ( $d = 0.77$ ; Myers & Crowther, 2009).

In fact, the tendency to make social, appearance-related comparisons accounts for much of the individual differences in body image and body image disturbance (Stormer & Thompson, 1996). Research examining the differential effects of upward versus downward social comparisons suggests that the tendency to engage in the former is associated with decreased self-esteem and appearance satisfaction, as well as increased emotional distress, negative affect, internalization of the thin-ideal, body dissatisfaction, thoughts of exercise, and drive for thinness (Bota, 1999; Engeln-Maddox, 2005; Leahey, Crowther, & Mickelson, 2007; Major, Testa, & Bylsma, 1991). In an ecological-momentary assessment (EMA) study, Leahey and Crowther (2008) demonstrated that upward body comparisons to thin media images were associated with less positive affect and appearance esteem and more guilt than upward body comparisons to peers among body-satisfied women.

### **Link between Media Exposure and Body Dissatisfaction**

Body dissatisfaction is most accurately defined as the cognitive-affective component of body image (Rosen, 1992), which is a complex, multidimensional construct that relates to how an individual feels about and perceives his/her body (Thompson, Heinberg, Altabe, & Tantleff-Dunn, 1999). Over the decades, a myriad of correlational and experimental studies have been conducted to evaluate the effects of exposure to media images of the thin-ideal on female body image. While the majority of these studies have clearly documented the negative effects of exposure to such images on body dissatisfaction and eating disturbances (Smolak & Thompson, 2009; Thompson et al., 1999; Thompson & Smolak, 2001), others have found little to no effect (e.g., Champion & Furnham, 1999; Martin & Kennedy, 1993).

In an attempt to synthesize the wealth of research on the topic, and explore possible explanations for the inconsistency of results across studies, a number of meta-analyses have been conducted (Holmstrom, 2004; Grabe, Ward, & Hyde, 2008; Groesz, Levine, & Murnen, 2002). The first of these meta-analyses, which included 34 studies conducted between 1990 and 2002, concluded that “viewing thin images has an effect that is similar to viewing images of homes and gardens—none” (overall effect size by study:  $d = 0.16$ ; Holmstrom, 2004, p. 210). Holmstrom (2004) concluded that the lack of effect may be due to the fact that women are so used to seeing such images that they “no longer evoke a response” (p. 210).

A more recent meta-analysis, conducted by Groesz, Levine, and Murnen (2002), focused solely on experimental manipulations of the thin beauty ideal. The 25 studies that met inclusion criteria were categorized by outcome: body satisfaction, weight satisfaction, physical attractiveness, and body size estimation. Possible moderators (e.g., dissatisfaction history, number of stimuli presented) were also examined. As hypothesized, body satisfaction was significantly lower after viewing images of thin models (overall effect size:  $d = -0.31$ ), but not after viewing images of average or overweight models, cars, or houses. Effects were more robust for participants with a prior history of body issues and those under 19 years of age. Contrary to predictions, the greater the number of stimuli presented, the smaller the effect.

Given the contradictory results of prior meta-analyses, Grabe, Ward, and Hyde (2008) conducted yet another meta-analysis, including 77 published and unpublished correlational and experimental studies. The weighted mean effect size for the relationship between exposure to thin media images and body dissatisfaction was  $-0.28$ .

For the relationship between media exposure and internalization of the thin-ideal, the weighted mean effect size was -0.39. Larger effects on internalization were found for correlational studies and those published in the 2000s, as opposed to the 1990s. Overall results suggested that exposure to media images of unrealistically thin women is associated with increased body dissatisfaction, internalization of the thin-ideal, and bulimic and anorexic attitudes and behaviors.

Taken together, these findings indicate that negative body image-related outcomes, including increased body dissatisfaction, are associated with even brief exposures (e.g., 5-minutes; see Yamamiya, Cash, Melnyk, Posavac, & Posavac, 2005) to media portrayals of the thin-ideal. Results from studies that have been conducted on the topic since the publication of the latest meta-analysis are consistent with this conclusion (Dalley, Buunk, & Umit, 2009; Hamilton, Mintz, & Kashubeck-West, 2007; Harper & Tiggemann, 2008; van den Berg et al., 2007). According to one study, whether exposure to idealized thin images leads to positive or negative outcomes is dependent on how the images are processed (Tiggemann, Polivy, & Hargreaves, 2009). Participants who were encouraged to compare themselves to images of thin models reported increases in negative mood and body dissatisfaction. In contrast, those who were instructed to imagine what it would be like to be the thin models depicted in the images reported increases in positive mood (Tiggemann et al., 2009).

Whether the media play a *causal* role in the development of negative body image and disordered eating in females, however, remains unclear. Levine and Murnen (2009) reviewed the extant literature on the topic against seven causal criteria (see Kraemer et

al., 1997; Stice, 2002) and concluded that exposure to the mass media is most accurately classified as a variable, as opposed to causal, risk factor.

### **Link between Media Exposure and Dieting Behaviors**

While the majority of media studies have examined the effects of exposure on body dissatisfaction (Grabe et al., 2008; Groesz et al., 2002), some have looked at eating behavior as an outcome measure. Eating behavior is typically operationalized as the quantity of food consumed by participants following exposure to media images featuring the thin-ideal (Krahé & Krause, 2010). In one experimental study, participants were asked to watch four neutral commercials alone or in addition to two commercials featuring thin women before being asked to taste and rate snacks (i.e., popcorn, whole-wheat crackers, Ritz crackers, and pretzels) on dimensions such as tastiness and freshness (Strahan, Spencer, & Zanna, 2007). Results across four studies indicated that participants who watched the thin commercials consumed 41% less food than those who watched the neutral commercials (Strahan et al., 2007). In another study, restrained eaters (i.e., individuals who attempt to restrict their caloric intake with the goal of decreasing or maintaining their current weight; Mills, Polivy, Herman, & Tiggemann, 2002) who were exposed to television commercials featuring thin models and diet products ate less food during a subsequent taste test than non-restrained eaters. The authors posited that the restrained eaters ate less because the thin images served to remind them of—and perhaps strengthen—their pre-existing commitment to restriction (Anschutz, Van Strien, & Engels, 2011). The role of restrained eating was also examined in a study conducted by Krahé and Krause (2010). After rating advertisements featuring thin or normal-weight models, participants were offered a choice of snacks—each available in a regular or diet

version. Restrained eaters were more likely to choose a diet snack than non-restrained eaters in the normal-weight condition. In the thin condition, trait levels of restraint did not influence consumption; participants in this condition were more likely to choose a diet snack, regardless of their tendency to restrict their intake (Krahé & Krause, 2010).

In contrast, some studies have linked dietary restraint to disinhibited eating post-exposure to media images. For example, Mills and colleagues found that restrained eaters who were exposed to images of thin models ate more than restrained eaters who were exposed to heavier models or no models. Restrained eaters, as a group, also ate more than non-restrained eaters (Mills, Polivy, Herman, & Tiggemann, 2002). These findings are consistent with previous studies that linked dietary restraint to disinhibited eating following exposure to thin-ideal images (e.g., Seddon & Berry, 1996; Strauss, Doyle, & Kreipe, 1994).

Despite contradictory results across individual studies, meta-analytic results suggest that media use is positively associated with disordered eating behaviors and attitudes (i.e., restrained eating, excessive exercise, or bingeing and purging;  $d = -0.30$ ; Grabe et al., 2008). Women who are exposed to media featuring thin-ideal models may compare themselves to these unrealistic and unattainable images. This unfavorable social appearance comparison may result in pressure to lose weight due to the discrepancy between their actual bodies and those of the models (e.g., Thompson et al., 1999). It is also possible the act of viewing thin-ideal images activates an association between non-thinness and rejection/stigmatization, which is associated with decreased food consumption (Strahan et al., 2007).



## **Adverse Outcomes Associated with Body Dissatisfaction and Dieting Behaviors**

The prevalence of dissatisfaction with body shape and weight among females is so high that researchers in the 1980's began referring to it as "normative discontent" (Rodin, Silberstein, & Striegel-Moore, 1984). More recently, its elevated prevalence and association with negative physical and psychological outcomes have been used to justify the categorization of body dissatisfaction as a public health concern (Diedrichs, Lee, & Kelly, 2011). Indeed, body dissatisfaction has been consistently linked with a host of negative outcomes including depression, anxiety, negative affect, low self-esteem, problems of sexual functioning, extreme exercising, eating disorders, and body dysmorphic disorder (e.g., Juarascio, Perone, & Timko, 2011; LePage, Crowther, Harrington, & Engler, 2008; McCabe & Ricciardelli, 2003; Steinberg, Phares, & Thompson, 2004; Stice & Bearman, 2001; Weaver & Byers, 2006).

Similarly, dietary restraint has been linked to overeating, weight fluctuations, eating disorders such as bulimia nervosa, and decreased self-esteem. Additional adverse effects of dieting include increased preoccupation with food, emotional lability, and binge eating (e.g., Polivy & Herman, 1987, 1995; Stice, Schupak-Neuberg, Shaw, & Stein, 1994).

## **Measures Aimed at Reducing the Impact of the Media**

**Media literacy.** The purpose of media literacy prevention programs is to teach individuals how to be active, critical consumers of media (Grabe et al., 2008). Consequently, such programs may encourage participants to examine sociocultural ideals of attractiveness as portrayed in the media, call attention to the discrepancy between the thin-ideal and the average American woman, and provide information on the techniques

used to alter media images. Among undergraduate college women, media literacy programs have been found to effectively decrease shape concern (Ridolfi & Vander Wal, 2008). Secondary prevention media literacy programs targeting women at high-risk for eating pathology have resulted in decreased body image disturbance (Posavac, Posavac, & Weigel, 2001), body dissatisfaction, drive for thinness, and internalization of the sociocultural ideal (Coughlin & Kalodner, 2006).

One study that examined the effectiveness of a media literacy program with or without a dissonance-induction component found that both the manipulation and intervention only produced effects among those women with high baseline levels of internalization (Yamamiya et al., 2005). The dissonance component provided no additional benefits. Another study that sought to determine the impact of a short- (i.e., one 1.5 hour session) versus a long-term (i.e., four 1.5 hour weekly sessions) media literacy intervention found that the shorter version resulted in decreased internalization of the thin-ideal only; the longer version also resulted in decreased body dissatisfaction (Watson & Vaughn, 2006). Despite evidence in support of a mere seven-minute media literacy intervention (Posavac et al., 2001), some studies have found short-term versions to be relatively ineffective (Irving & Berel, 2001; McVey & Davis, 2002).

**Air-brushing education.** Some researchers have attempted to reduce the detrimental impact of media exposure by educating participants on the air-brushing techniques used by the media to enhance the thinness of models depicted in advertisements. In one series of studies, an experimental condition that provided participants with information on how media images can be altered via airbrushing and other computer techniques was compared to a health-education control condition, which

provided information on important components of a healthy lifestyle (e.g., regular medical check-ups, dental hygiene; Stormer & Thompson, 1995, 1998). At the end of treatment, participants assigned to the experimental group demonstrated declines in appearance- and weight-related anxiety, as well as internalization of the thin-ideal. Only those participants who reported high baseline levels of internalization displayed increased appearance-satisfaction post-intervention.

In a more recent study, 200 women ( $M = 22$  years) were assigned to one of four conditions: exposure to thin images only, exposure to thin images plus intervention, exposure to fat images only, or exposure to fat images plus intervention (Ogden & Sherwood, 2008). The intervention used in this particular study was developed from an existing website (<http://demo.fb.se/e/girlpower>) that allows viewers to explore the changes made to a model depicted on a magazine cover and provides tips on how to be critical of the media.

All participants filled out measures designed to assess body dissatisfaction both prior to and after viewing six images. To control for facial expression and other model-specific variables, the fat images were created by digitally enhancing the photographs used in the thin image condition. Information on the extensive use of airbrushing in the media and images of a model “before” and “after” airbrushing were provided to participants in the intervention conditions between measurement occasions.

Results indicated that women who were exposed to the thin images reported greater levels of body dissatisfaction than women who were exposed to the fat images. More specifically, they reported feeling less attractive and less happy with their shape. They also reported greater discrepancy between their actual and ideal figures and a

greater desire to lose weight. As predicted, these increases in body dissatisfaction were minimized by the airbrushing intervention. The intervention did not have an effect on exposure to fat images, which was associated with decreases in body dissatisfaction.

**Downward social comparisons.** Research suggests that making upward social comparisons can have detrimental effects on women's body satisfaction and affect (Leahey et al., 2007). Given the connection between upward social comparisons and body dissatisfaction, Lew, Mann, Myers, Taylor, and Bower (2007) designed an intervention that instructed at-risk women (i.e., women with scores greater than or equal to a 27 on the Eating Disorder Inventory-Body Dissatisfaction subscale) to make downward comparisons of themselves to fashion magazine models in a writing exercise. After attending an initial laboratory session, 96 college-aged women ( $M = 19.09$  years) were randomly assigned to either the intervention or control group.

Those who were assigned to the intervention group were provided with educational information about the purposes and consequences of using thin models in advertising, and encouraged to focus on non-appearance-related aspects of models in advertisements (i.e., talents and friendships). They were then asked to look through a folder containing pictures of models and to write about non-appearance-related aspects of themselves that they valued but did not see in the models. In contrast, participants in the control group were asked to discuss features that the models in the pictures shared and then choose the five most attractive and describe them in writing. Participants in both groups were also asked to complete three weekly writing tasks (of the same nature) at home.

At four-week follow-up, within-group differences suggested that women in the intervention group exhibited an increase in mean ideal body shape, and reported decreased physical-appearance anxiety, weight dissatisfaction, and body dissatisfaction. Women in the control group, on the other hand, reported increased self-reported weight. The control group also reported a greater desire to lose weight than the intervention group at follow-up.

**Inclusion of “real” women in advertising.** While the majority of advertisements continue to feature very thin models, a number of companies have begun to use “real” women in their advertisements. In 2004, Dove beauty products launched the Campaign for Real Beauty, which includes an interactive website, message boards, magazine ads, and television commercials that seek to transform the idea of beauty that has been “defined by narrow, stifling stereotypes” for way too long (<http://www.campaignforrealbeauty.com/>). Ironically, Pascal Dangin, who worked on the famous Dove advertisements featuring women in their underwear, later admitted in an interview for the *New Yorker* that a great deal of retouching was required “to keep everyone’s skin and faces showing the mileage but not looking unattractive” (Collins, 2008). Perhaps inspired by Dove’s Campaign for Real Beauty, a popular women’s magazine in Germany, *Brigitte*, recently announced its plan to feature “real women” (including readers of the magazine) instead of professional models (Zacharakis, 2009).

**Banning of ultra-thin women from modeling.** In 2006, models determined to be too thin were banned from a top-level fashion show in Madrid, Spain (CNN World News, 2006). Medical personnel were available at the show to obtain weight and height measurements, which were then used to calculate body mass index (BMI). In effect,

models whose BMI fell below the cut-off for underweight (i.e., 18 or lower) were banned from the catwalk (Alfano, 2006). Since then, Madrid has retained its strict BMI restriction. Fashion officials in Milan, Italy have also adopted more conservative restrictions and, in 2007, the U.S. Council of Fashion of Designers of America issued voluntary guidelines to promote the use of healthier-looking models by means of increasing pre-show sleep time and improving the nutritional quality of food and beverages provided backstage (Wilson, 2007).

**Media activism and banning of advertisements.** Media activism refers to the practice of protesting advertisements that promote negative behaviors or poor body image. Conversely, it also involves sending praise to companies whose advertisements convey healthy, positive messages (Levine, Piran, & Stoddard, 1999). Since Thompson and Heinberg (1999) cited media literacy and media activism as modes of targeting harmful media messages, organizations like the National Eating Disorders Association (NEDA) have created websites to encourage and facilitate activist behaviors among consumers. NEDA's Media Watchdog website (<http://www.nationaleatingdisorders.org/programs-events/media-watchdog.php>) explains how individuals can become Media Watchdogs, who volunteer to bring media "worthy of praise or protest" to the attention of the NEDA office and fellow Watchdogs. They also have the ability to coordinate action (e.g., initiation of a product boycott) via a corresponding group on Facebook. As recently as June 2011, Yoplait agreed to remove an advertising campaign that could "trigger" individuals suffering from or at-risk for eating disorders at the urging of NEDA and its Media Watchdogs (National Eating Disorders Association [NEDA], 2011). In the U.K., Liberal Democrat MP Jo Swinson

created an anti-airbrushing web campaign that allowed her to compile the 700+ complaints used to justify the banning of an Olay advertisement featuring Twiggy (Liberal Democrats, 2009b; Sweney, 2009), and Debenhams department store in London recently initiated an airbrush-free ad campaign (Hough, 2010).

**Inclusion of disclaimers in advertising.** One of the most recent attempts to minimize the effects of unrealistically thin media images on female body image was made by Valerie Boyer, a member of the French parliament. Boyer's proposed law, on which the National Assembly has yet to vote, would require digitally altered photographs used in advertisements to be accompanied by the following "health warning:" "Photograph retouched to alter the physical appearance of a person" (Boyer et al., 2009; Erlanger, 2009; Telegraph Media Group [TMG], 2009). Boyer insists that images of ultra-thin models in advertisements provide an unrealistic, "stereotypical image" that can have detrimental effects on young people—particularly girls—who seek to emulate it (TMG, 2009). The law further proposes that non-conforming advertisers be fined 30,000 pounds or up to 50% of the cost of the campaign. Although the focus of the current draft law is magazine and newspaper advertising, Boyer argues that photographs on billboards and product packaging should not be exempt (TMG, 2009).

Calls for changes in advertising policy have not been constrained to France. In March, 2009, Australia established a National Advisory Group on Body Image tasked with providing advice to the government in the form of a National Strategy on Body Image (Australian Government, 2009). The stated goal of the Strategy was "to increase the positive thoughts and feelings that individuals have towards their own body as a means of improving their wellbeing" (Australian Government, 2009, p. 14). The

proposed strategy includes a voluntary Industry Code of Conduct on Body Image, which challenges organizations that choose to abide by it to promote body image by using unaltered images of ethnically diverse, healthy-weight models in their advertising. In the case of digitally-altered images, organizations are encouraged to inform consumers of the extent of the alteration.

In September, 2009, members of the United Kingdom’s Liberal Democrat Party—led by Jo Swinson MP—proposed a policy motion entitled *Real Women*. With the overall goals of expanding and improving opportunities for women, the motion included proposals aimed at improving body image among women and girls (Liberal Democrats, 2009a). Per the request of the Liberal Democrats, a group of researchers, psychologists, and doctors from the United Kingdom, the United States, Australia, Ireland, Spain, and Brazil came together in support of a report submitted to the U.K.’s Advertising Standards Authority (Dittmar et al., 2009). The report cited over 100 scientific studies linking exposure to “artificial and biologically inappropriate” (Dittmar et al., 2009, p. 1) media images of ultra-thin models with adverse health outcomes and challenged the belief that the effectiveness of advertisements is contingent upon the thinness of the models depicted therein. Further, the authors called for clear labeling of retouched advertisements aimed at adults and argued that retouching/airbrushing should be banned completely from advertisements aimed at children and adolescents under the age of 16 years.

### **Disclaimers versus Warnings**

The use of disclaimers and warnings has been described as a “natural outgrowth of modern commerce,” which has placed increasing distance between product



manufacturers and consumers (Heymann, 2010). Both disclaimers and warnings can be described as counternarratives because the tone of such disclosures (i.e., less emotional, unadorned, declarative), and the messages they convey, are inconsistent with those of the advertisements they accompany. Disclaimers and warnings differ, however, in that the purpose of the former is to clarify or prevent consumer confusion, while the goals of the latter are to inform consumers of the risk associated with a given activity/product and encourage them to exercise care (Heymann, 2010).

### **Use of Warning Labels in other Areas of Marketing and Advertising**

**Cigarette warnings.** The airbrushing disclaimer being proposed by lawmakers can be likened to the use of warnings on cigarette packages and alcohol advertisements. Cigarette warnings that read “Caution: Cigarette Smoking May be Hazardous to your Health” were first introduced in 1965; since then, warning labels have been used to educate smokers on tobacco-related health issues and promote interest in smoking cessation (O’Hegarty et al., 2006). Not surprisingly, a great deal of research has been conducted on the reactions to (e.g., O’Hegarty et al., 2006) and believability (e.g., Beltramini, 1988) and effectiveness (e.g., Hassan, Shiu, Thrasher, Fong, & Hastings, 2008) of such warnings.

Research on the reactions of young adults to warning labels on cigarette packages suggests that past and present cigarette smokers perceive warnings that include both text and graphics to be more effective than text-only warnings (O’Hegarty et al., 2006). This difference in perceived effectiveness may be accounted for by the fact that consumers are more likely to attend to warnings including graphics, as they are more difficult to ignore than text (O’Hegarty et al., 2006). In fact, eye-tracking research indicates that only 8%

of viewing time is spent attending to the current text-only warning label on cigarette packages (Fisher, Richards, Berman, & Krugman, 1989).

According to one study, it is important that consumers not only see the warning, but that they already believe it (Beltramini, 1988). Results indicated that young adults who held stronger beliefs about the harmful effects of smoking perceived the information presented in the warning label as more believable than those who held less strong initial beliefs about the harmfulness of smoking.

**Alcohol warnings.** The introduction of alcohol-related health warnings is a more recent phenomenon. Since the Alcohol Beverage Labeling Act (1988), all alcoholic beverage containers sold in the United States have been required to display a government warning of the risks associated with the consumption of alcohol, particularly when pregnant, driving, or operating machinery. In addition, most print advertisements for alcohol include a “Drink Responsibly” message (Thomsen & Fulton, 2007).

Research on the effectiveness of such labels and messages, however, has produced mixed results. In one eye-tracking study, adolescents were asked to view 14 advertisements—8 non-alcohol distracter advertisements and 6 alcohol advertisements that included a responsibility message (e.g., “Drink Responsibly,” “Designate a Driver”; Thomsen & Fulton, 2007). After each tracking session, the participants were shown black-and-white copies of the advertisements in which three areas (one of which was always the responsibility message) were blacked out. As part of a masked-recall exercise, they were asked to remember as much as they could about the content of the blacked-out-areas. Results indicated that participants spent more time attending to the advertisements including a responsibility or moderation message than those that did not

include such a message. The authors also compared total fixation time by specific “look zones” (e.g., headline, beverage bottle) and found that participants spent only 7% of total fixation time attending to responsibility messages; however, they spent more time fixating on responsibility messages that featured prominently in the advertisement than those that were more discrete. Of participants that had at least one fixation on the responsibility message “look zone,” less than 20% were able to recall the general concept or exact wording of the message.

Another study, conducted by Barlow and Wogalter (1993), provided further support for the importance of salience in increasing participant attention to and recall of alcohol warnings. When the warnings were less salient (i.e., smaller, non-contrasting, non-bold), participants in the experimental group did not differ significantly from participants in the no-warning control group in terms of knowledge and recall of the warnings. The study also provided support for the superior effectiveness of print versus voice warnings.

**Increasing the effectiveness of warning labels.** Research demonstrates that the impact of warning labels is dependent on the format in which the information is presented (Biehal & Chakravarti, 1982). Larger type, contrasting color (Barlow & Wogalter, 1993; Beltramini, 1988), graphics (O’Hegarty et al., 2006), and changing information presented therein (Argo & Main, 2004; Hammond et al., 2007) have all been associated with increased effectiveness of warning labels. A meta-analysis designed to determine the impact of warning labels across five dimensions of effectiveness (i.e., attention, reading and comprehension, recall, judgments, and behavioral compliance) provided support for

the utility of “vividness-enhancing characteristics” (i.e., color, symbols, graphics) in attracting consumer attention, but not for aiding in recall (Argo & Main, 2004).

Recall is influenced, however, by the placement of warning labels in print advertisements (Torres, Sierra, & Heiser, 2007). In a study conducted by Torres and colleagues (2007), participants exposed to overtly-placed labels (i.e., at the top of the ad, near the brand name) reported higher recall of the labels than those who were exposed to discreetly-placed labels (i.e., at the bottom of the ad). It remains unclear whether horizontal or vertical placement of labels influences consumer perception (Argo & Main, 2004). Ultimately, while consideration of the aforementioned variables may be important in the development of warning labels, “the ideal combination of warning factors has yet to be identified” (Argo & Main, 2004, p. 204).

### **Current Study**

The purpose of the current study was to determine whether the inclusion of a disclaimer versus warning message would reduce the effects of exposure to magazine advertisements portraying ultra-thin models on college-aged women’s body dissatisfaction and intent to diet. Given the previously cited research on increasing the effectiveness of warning labels, the messages in this study were designed to maximize both visibility and believability. Two strengths of message—disclaimer and warning—were tested, and the roles of trait body dissatisfaction, social comparison, and internalization of the thin-ideal as moderators of the relationship between exposure and (1) body dissatisfaction and (2) intent to diet were examined.

Based on findings from previous studies, the following hypotheses were proposed: (1) participants exposed to advertisements including a warning or disclaimer

will report lower levels of post-exposure body dissatisfaction than those exposed to the advertisements alone. (2) Participants exposed to advertisements including a warning or disclaimer will report lower levels of post-exposure intent to diet than those exposed to the advertisements alone. (3) The relationship between message condition and body dissatisfaction will be moderated by trait body dissatisfaction, social comparison, and internalization of the thin-ideal. More specifically, the effect of the message on post-exposure body dissatisfaction and intent to diet is predicted to be larger for participants who report higher trait levels of (a) body dissatisfaction (MBSRQ-AE), (b) social comparison (PACS), and (c) internalization of the thin-ideal (SATAQ-3) than those who report lower levels of these variables. (4) The relationship between message condition and intent to diet will be similarly moderated by trait body dissatisfaction, social comparison, and internalization of the thin-ideal. Given the lack of previous research on the topic, no hypotheses regarding the efficacy of the warning versus disclaimer are being proposed.

## Method

### Participants

Participants ( $N = 283$ ) were female undergraduate students at the University of South Florida who were recruited via SONA, the Psychology department participant pool (see Table 1 for participant characteristics by group). They ranged in age from 18 to 51 years ( $M = 19.75$ ,  $SD = 2.82$ ). Over half of the participants self-identified as Caucasian/White (55.5%). African Americans/Blacks made up 9.9% of the sample, while Asians and Native Hawaiian or Pacific Islanders made up 5.7% and 0.7% of the sample, respectively. The remaining participants identified as Hispanic or Latina (14.5%) or “other” (13.8%). In terms of year in school, the majority of participants indicated that they were in their first year (52.3%). The mean BMI, based on self-reported height and weight, was 23.71 ( $SD = 5.09$ ). According to the Centers for Disease Control’s (CDC) BMI-based weight status categories, 8.8% of the sample was underweight ( $BMI < 18.5$ ); 61.1% was normal weight ( $18.5 \geq BMI \leq 24.9$ ); 17.7% was overweight ( $25 \geq BMI \leq 29.9$ ), and 11% was obese ( $BMI > 30$ ). The mean desired weight change, calculated by subtracting each participant’s ideal weight from her current weight, was -14.75 pounds ( $SD = 21.65$ ). All participants received extra credit, in the form of two SONA points, in exchange for their participation.

## Measures

**Magazine advertisements.** A total of 21 advertisements featuring a single female model wearing figure-revealing clothing were pulled from popular, widely-available women's magazines (e.g., *Bazaar*, *Vogue*, *InStyle*) that had been published within the last couple of years. Each advertisement was scanned and inserted—one image per slide—into a PowerPoint presentation. The slideshow was then sent to a panel of subject matter experts (i.e., members of the Body Image Research Group) for review. Members were asked to rate each of the 21 images in terms of whether they thought the model featured therein represented the thin-ideal using a four-point Likert-type scale ranging from *strongly disagree* (1) to *strongly agree* (4). They were then asked to list the slide numbers of the five magazine advertisements featuring models that *best* represented the thin-ideal. The five top-rated advertisements were chosen as the final stimuli. The number of stimuli was limited to five because meta-analytic results suggest that the effect of exposure on body dissatisfaction becomes attenuated as the number of stimuli approaches and exceeds 10 (Groesz et al., 2002). Copies of each advertisement were edited to include a (1) warning or (2) disclaimer.

For the non-model, time-effects control condition, single-page car advertisements were pulled from popular, widely available magazines (e.g., *Sports Illustrated*). As above, each advertisement was scanned and inserted into a PowerPoint presentation. To maintain consistency among conditions, the number of final car advertisements chosen was also limited to five.

**Messages.** Two messages were used in this study. The disclaimer inserted into the advertisements was that being championed by Boyer—"Retouched photograph aimed

at changing a person's physical appearance." The warning was created to inform the viewer about the alteration of the image more assertively than the disclaimer by relating it to her safety and health. Thus, the warning read "Warning: Trying to look as thin as this model may be dangerous to your health." To balance visibility and believability, the messages were typed in Arial font, size 10, and located in white boxes outlined in black and placed at the top of each advertisement in PowerPoint. Whether the message was placed at the top-left or top-right of the advertisement was dependent on the content of the advertisement; efforts were made not to obscure the content of the advertisement with the message.

**Body dissatisfaction.** The Multidimensional Body-Self Relations Questionnaire-Appearance Evaluation subscale (MBSRQ-AE; Brown, Cash, & Mikulka, 1990) was used to measure trait body dissatisfaction. This brief, seven-item (e.g., "Most people would consider me good looking") subscale asks participants to rate feelings of physical attractiveness and satisfaction with their physical appearance on a 5-point Likert-type scale. Response options ranged from *definitely disagree* (1) to *definitely agree* (5). Negatively worded items (e.g., "I'm physically unattractive.") were reverse-scored before item responses were summed to create a total score. Since it is a measure of body satisfaction, higher scores are indicative of lower body dissatisfaction. The MBSRQ has demonstrated good test-retest reliability ( $r = .91$ ), and internal consistency ( $\alpha = .88$ ; Brown et al., 1990) in prior samples. Internal consistency in the current sample was  $\alpha = .89$ .

State body dissatisfaction, before and after exposure to the magazine advertisements, was measured using the Visual Analogue Scales (VAS; Heinberg &



Thompson, 1995). Participants were presented with a series of 100 mm lines anchored by *none* (left-most point) and *extreme* (right-most point) and asked to indicate their current feelings of dissatisfaction with (1) body shape, (2) weight/size, and (3) physical appearance by placing marks on the respective lines. Negative affect related VAS (e.g., anger, anxiety, depression) and filler VAS (e.g., happiness, confidence) were also included. The distance, as measured in millimeters by a ruler, from the left-most point on the line (0) to the participant's mark indicated their level of distress (Thompson et al., 1999). Completed VAS items were measured separately by two trained, undergraduate research assistants. Given a high level of correspondence ( $r = .99$ ), measurements were averaged across research assistants. Composite pre- and post-exposure body dissatisfaction scores were created by averaging the scores of the three aforementioned body-related items. Cronbach's alpha for the composite body dissatisfaction score was .93 for pre- and .96 for post-exposure in the current sample.

The VAS is commonly used in experimental exposure studies because it can be given repeatedly over a short period of time without participants remembering their previous responses (Thompson, 2004). An additional benefit of the VAS, as used as a state measure of body dissatisfaction, is that it is highly correlated with other widely-used measures of body dissatisfaction (e.g., Eating Disorder Inventory-Body Dissatisfaction subscale; Thompson, 2004).

**Internalization of the thin-ideal.** Trait internalization of media messages promoting the thin-ideal was measured using the nine-item general Internalization subscale of the Sociocultural Attitudes Towards Appearance Questionnaire (SATAQ-3-I-G; Thompson, van den Berg, Roehrig, Guarda, & Heinberg, 2004). Participants were

asked to rate their agreement with each statement (e.g., “I’ve felt pressure from TV or magazines to be thin.”) on a 5-point Likert-type scale ranging from *definitely disagree* (1) to *definitely agree* (5). The general internalization subscale of the SATAQ-3 has demonstrated excellent reliability ( $\alpha = .96$ ; Thompson et al., 2004). Internal consistency of the SATAQ-3-I-G in this sample was  $\alpha = .91$ .

**Social comparison.** The Physical Appearance Comparison Scale (PACS; Thompson, Heinberg, & Tantleff, 1991) was used to assess the tendency to compare one’s physical appearance with that of others. Participants were presented with five items (e.g., “In social situations, I sometimes compare my figure to the figures of other people.”) and asked to rate the frequency with which they engage in the specified behavior on a 5-point Likert-type scale ranging from *never* (1) to *always* (5). The PACS demonstrated adequate internal consistency in the current sample ( $\alpha = .78$ ).

**Distraction task.** An externally-focused, active distraction task was used to decrease the possibility of the trait measures influencing participants’ subsequent completion of the pre-exposure state measures. Participants were asked to identify and write about their top 10 travel destinations. Previous research suggests that a brief (5 – 8 min.) distraction task is sufficient to effectively bring experimentally-induced mood states back to baseline (Lyubomirsky & Nolen-Hoeksema, 1995; Morrow & Nolen-Hoeksema, 1990); such a task has been used for the same purposes as in this current study by Roehrig and colleagues (2008).

**Dieting.** A modified version of the 10-item Dutch Eating Behavior Questionnaire-Restraint Scale (DEBQ-RS; Van Strien, Frijters, Bergers, & Defares, 1986) was used to assess participants’ post-exposure intent to diet (DEBQ-Intentions).

The original scale, used to assess usual dieting behaviors (e.g., “*Did you* eat less than you normally would to lose weight?”), was modified to assess intended dieting behaviors (e.g., “*Do you plan to* eat less than you normally would to lose weight?”). The DEBQ has shown excellent internal consistency ( $\alpha = .95$ ) and test-retest reliability ( $r = .92$ ; Allison, Kalinsky, & Gorman, 1992). Excellent internal consistency was also demonstrated in the current sample ( $\alpha = .92$ ).

**Magazine usage.** To increase the study’s credibility as an examination of the effectiveness of magazine advertisements, participants were asked to answer a series of questions about their magazine usage. More specifically, they were asked to rate the frequency with which they read and purchase magazines, turn to magazines for advice on fashion and “being attractive,” and purchase products that they see advertised in magazines on a 5-point Likert-type scale. These data were not included in the analyses.

**Consumer questionnaire.** To further increase the study’s credibility as an examination of advertising effectiveness, participants were asked to complete an adapted Consumer Response Questionnaire (Harper & Tiggemann, 2008; Mills et al., 2002; Tiggemann et al., 2009) for each advertisement. The five statements in this questionnaire focused specifically on qualities of the advertisement and not the model featured therein (e.g., “If I saw this ad in a magazine, it would catch my eye.”). Response options ranged from *strongly disagree* (1) to *strongly agree* (5). These data were not included in the analyses.

**Message rating form.** A modified version of the Message Rating Form (Sperry, Thompson, Roehrig, & Vandello, 2005) was created to assess the credibility of the cover story as well as the extent to which the magazine advertisements were easy to see,

applicable, and influential. Items were rated on a 5-point Likert-type scale ranging from *definitely disagree* (1) to *definitely agree* (5). Two message-specific questions were added to the version given to participants assigned to the experimental groups to determine (a) whether participants noticed the message (i.e., “Did you notice the message in the box at the top of the ads?”) and (b) how well they attended to the message (i.e., “What did the message say? Please write the message you recall seeing in the space below.”).

**Demographic information.** Participants were asked to provide demographic information including age, race/ethnicity, year in school, height, weight, and ideal weight. Self-reported height in inches and weight in pounds were used to calculate Body Mass Index (BMI) using the following formula:  $[\text{weight in pounds} / (\text{height in inches}^2)] \times 703$ .

### **Procedure**

A description of the study as examining the “effectiveness of advertising” was posted on SONA. Upon entering the designated computer lab, participants were asked to take a seat at one of the tables in the center of the room. Either the primary investigator or a research assistant reviewed the informed consent document and answered any questions. Individuals who opted to participate in the study turned in a signed informed consent document before receiving Packet A, which included the trait measures (i.e., MBSRQ-AE, PACS, SATAQ-3-I-G), the distraction task, and the pre-exposure VAS. An image of a stop sign and text instructing the participant to “please sit quietly and await further instructions” were placed at the bottom of the last page of trait measures. Once all participants had reached this point in the packet, they were instructed that the

next page would be timed and that they would have five minutes to complete it. They were then asked to turn to the next page. To reduce the potential effect of having completed the trait measures on subsequent state measures, participants were asked to identify their top 10 travel destinations and write a brief paragraph about their top choice.

At the end of the five minutes, participants were randomly assigned to one of four groups: (1) disclaimer, (2) warning, (3) model control, or (4) car control in blocks of four. The specific group to which each individual within the block was assigned was determined by a series of random number lists generated by Research Randomizer (randomizer.org). Participants were assigned to groups in a block format to ensure that groups would be equal in size and that participants would be run in each group over the course of the experiment (Kazdin, 2003). Participants were provided their group number and asked to move to the appropriately-labeled computer with their packet and writing utensil. Each participant was seated at her own computer and spacing was adequate to ensure privacy of responses. Participants completed the pre-exposure VAS before being instructed to turn on their computer screens and view a PowerPoint presentation, which was already open to an instructions slide.

The presentation contained five magazine advertisements, each on a separate slide. Participants in the model control group were exposed to original, untouched advertisements featuring ultra-thin models, while those in the car control group were exposed to original, untouched car advertisements. The experimental groups were exposed to the same advertisements as the model control group plus either a disclaimer or a warning, depending on the experimental group to which the participant was randomized. Each slide was programmed to display for 50 seconds before advancing to

the next slide. During this time, participants were asked to look at the advertisements and complete a separate Consumer Response Questionnaire for each one. Once they had viewed and rated each of the five advertisements, a slide appeared informing them that they had finished this portion of the study and instructing them to raise their hand to receive Packet B (i.e., post-exposure VAS, DEBQ-Intentions, Message Rating Form, demographics). At this point, the primary investigator or research assistant collected Packet A and provided the participant with either Packet B1 (control groups) or B2 (experimental groups).

Once all participants had completed Packet B, the packets were collected and debriefing took place. Participants were informed of the actual purpose of the study and provided a rationale for the use of deception. They were also given the opportunity to ask questions. As participants left the room, they were handed a debriefing form containing further information about the purpose of the study, contact information for the Counseling Center, and suggestions for further reading.

## Results

### Preliminary Analyses

Prior to conducting analyses, means were imputed for all participants ( $n = 6$ ) missing  $\leq 10\%$  of items on any given measure, and the data were checked for normality and outliers. All outcome variables were well below the  $\pm 1$  criterion for skewness and  $\pm 2$  criterion for kurtosis, indicating normality of data. To check for univariate outliers, standardized scores were obtained for post-exposure body dissatisfaction and intent to diet. According to Tabachnick and Fidell (2007), cases with standardized scores  $> |3.29|$  are potential outliers; no such cases were identified.

**Attention and manipulation checks.** Participants in the disclaimer or warning group who (1) reported that they did not notice the message in the box at the top of the advertisements or (2) reported that they noticed the message, but were unable to recall it ( $n = 12$ ) were removed from the data set.

Mean responses for the full sample were obtained for each item on the MRF, which asked participants to rate the convincingness of the cover story, as well as the visibility, applicability, and influence of the advertisements. The majority of participants reported that the advertisements were easy to see ( $M = 4.14$ ,  $SD = 0.96$ ), but were unsure when it came to the credibility of the cover story ( $M = 3.54$ ,  $SD = 0.86$ ). Participants did not perceive the advertisements to be applicable ( $M = 2.93$ ,  $SD = 1.14$ ) nor influential ( $M = 2.40$ ,  $SD = 1.06$ ) to them.

A one-way ANOVA, conducted to determine whether group differences existed on the composite score of the MRF (i.e., scale mean), indicated that there were no significant group differences,  $F(3, 279) = 0.85$ , n.s. When the MRF items were assessed individually, group differences emerged on two of the four items. The car control group differed significantly from (1) the warning group on ratings of the advertisements' visibility ( $F(3,279) = 3.70$ ,  $p < .05$ ) and (2) the model control group on ratings of the applicability of the advertisements ( $F(3,279) = 4.14$ ,  $p < .01$ ). The car control group ( $M = 4.41$ ,  $SD = 0.66$ ) rated the advertisements as easier to see than the warning group ( $M = 3.88$ ,  $SD = 1.21$ ). The car control group ( $M = 2.60$ ,  $SD = 1.11$ ) also rated the advertisements as significantly less applicable than the model control group ( $M = 3.25$ ,  $SD = 1.05$ ). Given the group differences on these items, primary analyses were conducted with and without entering the MRF composite as a covariate. Since the results conducted with versus without covarying out the MRF were comparable, only those from the latter analyses are reported.

**Descriptive statistics.** Full sample and group mean values and standard deviations were obtained for all pre-exposure trait and continuous demographic variables; frequencies were obtained for categorical demographic variables (see Tables 1 – 2).

A series of one-way ANOVAs were conducted to ensure group equivalency on demographic and pre-exposure trait variables. No significant differences were found among groups on age ( $F(3, 278) = 0.99$ , n.s.), BMI ( $F(3, 279) = 1.08$ , n.s.), trait body dissatisfaction ( $F(3, 279) = 0.50$ , n.s.), social appearance-related comparison ( $F(3, 279) = 1.27$ , n.s.), or internalization of the thin-ideal ( $F(3, 279) = 0.36$ , n.s.).



Table 1: Participant Descriptive Characteristics and Demographic Information

	Full Sample	Disclaimer	Warning	Model	Car
Characteristic	( <i>N</i> = 283)	( <i>n</i> = 68)	( <i>n</i> = 67)	( <i>n</i> = 75)	( <i>n</i> = 73)
	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )
Age	19.75 (2.82)	19.46 (1.35)	20.18 (4.54)	19.88 (2.73)	19.51 (1.68)
BMI	23.71 (5.09)	23.96 (5.21)	24.52 (5.45)	23.14 (4.82)	23.32 (4.90)
	<i>N</i> (%)	<i>N</i> (%)	<i>N</i> (%)	<i>N</i> (%)	<i>N</i> (%)
Race/Ethnicity					
African American/Black	28 (9.9)	5 (7.4)	8 (11.9)	11 (14.7)	4 (5.5)
Asian	16 (5.7)	2 (2.9)	4 (6.0)	5 (6.7)	5 (6.8)
Native Hawaiian or Pacific Islander	2 (.7)	—	—	—	2 (2.7)
Hispanic/Latina	41 (14.5)	16 (23.5)	5 (7.5)	10 (13.3)	10 (13.7)
Caucasian/White	157 (55.5)	40 (58.8)	38 (56.7)	38 (50.7)	41 (56.2)
Other	39 (13.8)	5 (7.4)	12 (17.9)	11 (14.7)	11 (15.1)
Year in School					
First	148 (52.3)	30 (44.1)	41 (61.2)	42 (56.0)	35 (47.9)
Second	60 (21.2)	20 (29.4)	6 (9.0)	12 (16.0)	22 (30.1)
Third	42 (14.8)	10 (14.7)	10 (14.9)	12 (16.0)	10 (13.7)
Fourth	27 (9.5)	8 (11.8)	8 (11.9)	8 (10.7)	3 (4.1)
Other	6 (2.1)	—	2 (3.0)	1 (1.3)	3 (4.1)
Weight Category <sup>a</sup>					
Underweight	25 (8.8)	6 (8.8)	7 (10.4)	10 (13.3)	2 (2.7)
Normal weight	173 (61.1)	42 (61.8)	36 (53.7)	46 (61.3)	49 (67.1)
Overweight	50 (17.7)	12 (17.6)	12 (17.9)	11 (14.7)	15 (20.5)
Obese	31 (11.0)	7 (10.3)	11 (16.4)	7 (9.3)	6 (8.2)

*Note.* <sup>a</sup>Based on Centers for Disease Control's (CDC) BMI-based weight status categories where Underweight = BMI < 18.5; Normal weight = 18.5 ≤ BMI ≤ 24.9; Overweight = 25 ≤ BMI ≤ 29.9; Obese = BMI > 30.

Table 2: Means and Standard Deviations for Pre-Exposure Trait and Outcome Variables

Measure	Full Sample ( <i>N</i> = 283)	Disclaimer ( <i>n</i> = 68)	Warning ( <i>n</i> = 67)	Model ( <i>n</i> = 75)	Car ( <i>n</i> = 73)
MBSRQ-AE	4.90 (1.10)	4.89 (1.03)	4.81 (1.18)	5.03 (1.10)	4.88 (1.08)
PACS	14.94 (3.49)	15.07 (3.53)	15.51 (3.45)	14.39 (3.33)	14.85 (3.63)
SATAQ-3-I-G	27.18 (7.71)	26.71 (7.34)	27.78 (7.79)	27.54 (8.14)	26.71 (7.60)
Post BD	41.76 (29.86)	42.98 (28.82)	46.27 (33.16)	41.97 (30.92)	36.28 (26.05)
DEBQ-I	25.82 (10.50)	26.74 (10.41)	25.10 (11.28)	25.80 (10.41)	25.64 (10.07)

*Note.* MBSRQ-AE = Multidimensional Body-Self Relations Questionnaire- Appearance Evaluation subscale; PACS = Physical Appearance Comparison Scale; SATAQ-3-I-G = Sociocultural Attitudes Towards Appearance Questionnaire- Internalization General subscale; Post BD = post-exposure body dissatisfaction composite score; DEBQ-I = Dutch Eating Behavior Questionnaire- Intentions.

Group differences on categorical demographic variables were examined via chi-square tests. No significant group differences existed in terms of race/ethnicity ( $\chi^2(15) = 20.56$ , n.s.) or year in school ( $\chi^2(12) = 19.46$ , n.s.).

**Correlational analyses.** Pearson product-moment correlations were obtained for state and trait measures, as well as outcome measures (Table 3). Directions of significant relationships were consistent with prior research in the field. Body satisfaction, as measured by the MBSRQ-AE, was negatively correlated with all trait and state variables, except for the VAS happiness (pre  $r = .16$ ; post  $r = .28$ ,  $p$ 's < .01) and confidence (pre  $r = .47$ ; post  $r = .49$ ,  $p$ 's < .01) scores. Since the MBSRQ-AE measures body satisfaction, the positive correlations suggest that participants who were more satisfied with their bodies reported greater levels of state happiness and confidence. The other trait and outcome variables (i.e., PACS, SATAQ-3-I-G, DEBQ-Intentions) were positively correlated with most variables, but negatively correlated with the VAS confidence score. More specifically, greater social appearance comparison, thin-ideal internalization, and

intent to diet were associated with decreased confidence and increased body dissatisfaction, depression, and anxiety. Greater intent to diet was also associated with increased anger both pre- ( $r = .12, p < .05$ ) and post-exposure ( $r = .17, p < .01$ ).

With regards to state variables, positive VAS items (i.e., happiness, confidence) were positively correlated with other positive VAS items, and negative VAS items (i.e., dissatisfaction with body shape, anxiety, dissatisfaction with weight/size, anger, depression, and dissatisfaction with physical appearance) were positively correlated with other negative VAS items.

Correlations between pre- and post-exposure VAS scores were also examined (Table 4). Results revealed significant, positive relationships between all respective pre- and post-exposure VAS scores, with correlation coefficients ranging from  $r = .78$  (Confidence) to  $r = .87$  (Anxiety, Depression, Dissatisfaction with weight/size, and Dissatisfaction with Physical Appearance).

### **Primary Analyses**

**Body dissatisfaction.** To determine whether the effects of exposure to magazine advertisements portraying ultra-thin models on body dissatisfaction would differ by group, an ANCOVA was conducted with group as the independent variable and post-exposure body dissatisfaction as the dependent variable. Given the significant correlation between pre- and post-exposure VAS scores, pre-exposure body dissatisfaction was entered as a covariate in the analysis. For both pre- and post-exposure, a body dissatisfaction composite was created by averaging the scores from the three VAS body dissatisfaction-related items (i.e., Dissatisfaction with body shape; Dissatisfaction with weight/size; Dissatisfaction with physical appearance).

Table 3: Correlations among Trait, State (VAS), and Outcome Variables

Measure	1	2	3	4	5	6	7	8	9	10	11	12
1. MBSRQ-AE	—	-.33**	-.34**	-.51**	.16**	-.72**	-.24**	.47**	-.69**	-.13*	-.34**	-.75**
2. PACS	-.33**	—	.62**	.42**	-.02	.35**	.30**	-.16**	.35**	.00	.26**	.41**
3. SATAQ-3-I-G	-.34**	.62**	—	.40**	-.02	.36**	.25**	-.28**	.31**	.07	.29**	.43**
4. DEBQ-I	-.51**	.42**	.40**	—	-.12	.57**	.21**	-.26**	.61**	.12*	.32**	.56**
5. VAS Happiness	.28**	-.08	-.10	-.20**	—	-.08	-.19**	.41**	-.13*	-.23**	-.35**	-.14*
6. VAS Body shape	-.70**	.38**	.38**	.59**	-.15*	—	.25**	-.34**	.81**	.13*	.31**	.84**
7. VAS Anxiety	-.24**	.28**	.28**	.23**	-.29**	.34**	—	-.24**	.28**	.43**	.55**	.35**
8. VAS Confidence	.49**	-.24**	-.30**	-.33**	.51**	-.42**	-.29**	—	-.28**	-.10	-.35**	-.39**
9. VAS Weight/size	-.67**	.37**	.36**	.66**	-.20**	.90**	.32**	-.38**	—	.21**	.30**	.79**
10. VAS Anger	-.17**	.07	.10	.17**	-.25**	.25**	.56**	-.20**	.29**	—	.55**	.20**
11. VAS Depression	-.34**	.26**	.28**	.31**	-.37**	.37**	.65**	-.44**	.39**	.62**	—	.42**
12. VAS Physical	-.73**	.41**	.39**	.59**	-.22**	.88**	.35**	-.45**	.87**	.30**	.44**	—

*Note.* Intercorrelations with pre-exposure state (VAS) variables are presented above the diagonal; intercorrelations with post-exposure state (VAS) variables are presented below the diagonal. For the MBSRQ-AE, lower scores are indicative of greater body dissatisfaction; for all other scales, higher scores are indicative of more extreme responding in the direction of the construct assessed. MBSRQ-AE = Multidimensional Body-Self Relations Questionnaire- Appearance Evaluation subscale; PACS = Physical Appearance Comparison Scale; SATAQ-3-I-G = Sociocultural Attitudes Towards Appearance Questionnaire- Internalization General subscale; DEBQ-I = Dutch Eating Behavior Questionnaire- Intentions; VAS Happiness = Visual Analog Scale Happiness; VAS Body shape = Visual Analog Scale Dissatisfaction with Body Shape; VAS Anxiety = Visual Analog Scale Anxiety; VAS Confidence = Visual Analog Scale Confidence; VAS Weight/size = Visual Analog Scale Dissatisfaction with Weight/Size; VAS Anger = Visual Analog Scale Anger; VAS Depression = Visual Analog Scale Depression; VAS Physical = Visual Analog Scale Dissatisfaction with Physical Appearance.

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

Table 4: Correlations between Pre- and Post-Exposure Visual Analog Scale (VAS) Scores

Measure	Post-Exposure							
	1	2	3	4	5	6	7	8
<b>Pre-Exposure</b>								
1. Happiness	.82**	-.05	-.20**	.36**	-.12*	-.20**	-.29**	-.11
2. Dissatisfaction with body shape	-.15*	.82**	.25**	-.38**	.79**	.19**	.30**	.79**
3. Anxiety	-.24**	.30**	.87**	-.26**	.30**	.46**	.58**	.32**
4. Confidence	.48**	-.30**	-.25**	.78**	-.27**	-.11	-.37**	-.33**
5. Dissatisfaction with weight/size	-.18**	.83**	.31**	-.34**	.87**	.24**	.30**	.79**
6. Anger	-.17**	.17**	.48**	-.09	.21**	.80**	.51**	.21**
7. Depression	-.38**	.32**	.58**	-.36**	.36**	.55**	.87**	.40**
8. Dissatisfaction with physical appearance	-.24**	.82**	.32**	-.44**	.80**	.27**	.41**	.87**

Note. \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

Prior to conducting the ANCOVA, the homogeneity-of-regression assumption was tested. A custom model was created to evaluate the interaction between group and pre-exposure body dissatisfaction. Results indicated that the relationship between pre-exposure body dissatisfaction and post-exposure body dissatisfaction did not differ significantly as a function of the group ( $F(3, 275) = 2.44, p > .05$ ), thereby allowing for the use of pre-exposure body dissatisfaction as a covariate in the subsequent analysis.

Results from the ANCOVA indicated a significant effect of group on post-exposure body dissatisfaction, controlling for pre-exposure levels of body dissatisfaction ( $F(3, 278) = 5.41, p < .01$ , partial  $\eta^2 = .055$ ; Table 5).

Table 5: Analysis of Covariance (ANCOVA) for Post-Exposure Body Dissatisfaction by Group

Source	SS	df	MS	F	Partial $\eta^2$
Pre-BD	207468.46	1	207468.46	1429.62***	.84
Group	2354.23	3	784.74	5.41**	.06
Error	40343.78	278	145.12		
Total	745033.56	283			

*Note.* Pre-BD = pre-exposure body dissatisfaction; SS = Type III Sum of Squares; df = degrees of freedom; MS = Mean Square;  $\eta^2$  = Eta squared.

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

A series of six pairwise comparisons was conducted to further examine differences among the adjusted group means. Given the exploratory nature of this study, corrections for multiple comparisons were not employed. Three of the comparisons yielded significant results. The car control group reported significantly lower post-exposure body dissatisfaction than the (1)

disclaimer, (2) warning, and (3) model control groups (see Table 6 for post-exposure adjusted means and confidence intervals).

Table 6: Covariate Adjusted Means, Standard Errors, and Confidence Intervals for Post-Exposure Body Dissatisfaction by Group

Group	Adjusted <i>M</i>	<i>SE</i>	95% CI	
			Lower	Upper
Disclaimer	41.51	1.46	38.64	44.39
Warning	44.87	1.47	41.97	47.77
Model control	43.57	1.39	40.83	46.31
Car control	37.29	1.41	34.51	40.07

*Note.* *M* = Mean; *SE* = standard error; *CI* = confidence interval.

**Intent to diet.** A second ANCOVA was conducted to determine whether the effects of exposure to magazine advertisements on intent to diet would differ by group (Table 7). Group was entered as the independent variable, the DEBQ-Intentions score was entered as the dependent variable, and the VAS pre-exposure body dissatisfaction composite was entered as the covariate. A preliminary test of the homogeneity-of-regression assumption indicated that the relationship between pre-exposure body dissatisfaction and intent to diet did not differ significantly as a function of the group,  $F(3, 275) = 0.26, p > .05$ . Since the subsequent ANCOVA was not significant ( $F(3, 278) = 0.52, p > .05$ , partial  $\eta^2 = .006$ ), pairwise comparisons were not conducted.

Table 7: Analysis of Covariance (ANCOVA) for Intent to Diet by Group

Source	SS	df	MS	F	Partial $\eta^2$
Pre-BD	11928.92	1	11928.92	174.04***	.39
Group	107.18	3	35.73	0.52	.006
Error	19054.46	278	68.54		
Total	219730.36	283			

*Note.* Pre-BD = pre-exposure body dissatisfaction; SS = Type III Sum of Squares; *df* = degrees of freedom; MS = Mean Square;  $\eta^2$  = Eta squared.

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

### Moderation Analyses

To determine whether the relationship between group and post-exposure body dissatisfaction was moderated by trait body dissatisfaction (MBSRQ-AE), physical appearance comparison (PACS), and/or internalization of the thin-ideal (SATAQ-3-I-G), a series of regressions was conducted. Prior to specifying the model, three dummy variables were created from the original, four-level “group” variable. Effect-coding was employed, where the values -0.5 versus +0.5 were used to designate the groups; the car control group served as the reference. Moderator variables were also centered, as per the recommendation of Aiken and West (1991), thereby giving meaning to a value of zero. A total of three regressions were conducted (Table 8 – 10). A separate regression was conducted for each of the potential moderators (i.e., MBSRQ-AE, PACS, SATAQ-3-I-G). In each analysis, the predictors were entered in blocks as follows: (1) pre-exposure body dissatisfaction; (2) group variables, centered moderator variable; and (3) the interaction terms between each group and the centered moderator variable. Post-exposure body dissatisfaction was entered as the dependent variable. Results indicated that none of the proposed trait variables moderated the impact of group on body dissatisfaction.



Table 8: Trait Body Dissatisfaction Moderator Analysis

Variable	Model 1 $\beta$	Model 2 $\beta$	Model 3 $\beta$
Pre-BD	.91***	.86***	.85**
Group 1		.06*	.06*
Group 2		.12***	.11***
Group 3		.10**	.10**
cMBSRQ		-.07	-.16**
Group1*cMBSRQ			-.05
Group2*cMBSRQ			-.06
Group3*cMBSRQ			-.06
$R^2$	.83	.84	.84
$F$	1373.99***	294.33***	185.18***

*Note.* Pre-BD = Pre-exposure body dissatisfaction; cMBSRQ = centered score (i.e., raw score – mean) on Multidimensional Body-Self Relations Questionnaire- Appearance Evaluation.  
\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

Table 9: Physical Appearance Comparison Moderator Analysis

Variable	Model 1 $\beta$	Model 2 $\beta$	Model 3 $\beta$
Pre-BD	.91***	.89***	.89***
Group 1		.06*	.06*
Group 2		.11***	.10**
Group 3		.10**	.09**
cPACS		.05	.04
Group1* cPACS			-.01
Group2* cPACS			.02
Group3* cPACS			-.02
$R^2$	.83	.84	.84
$F$	1373.99***	293.99***	183.00***

*Note.* Pre-BD = Pre-exposure body dissatisfaction; cPACS = centered score (i.e., raw score – mean) on Physical Appearance Comparison Scale.  
\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

Table 10: Internalization of the Thin-Ideal Moderator Analysis

Variable	Model 1 $\beta$	Model 2 $\beta$	Model 3 $\beta$
Pre-BD	.91***	.89***	.89***
Group 1		.06*	.06*
Group 2		.11***	.11***
Group 3		.09**	.09**
cSATAQ		.04	.10*
Group1* cSATAQ			.02
Group2* cSATAQ			.06
Group3* cSATAQ			.04
$R^2$	.83	.84	.84
$F$	1373.99***	292.83***	183.56***

*Note.* Pre-BD = Pre-exposure body dissatisfaction; cSATAQ = centered score (i.e., raw score – mean) on Sociocultural Attitudes Towards Appearance Questionnaire-Internalization-General. \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

### Exploratory Analyses

Given that the study was based on the assumption that the model control group would report a post-exposure increase in body dissatisfaction, an exploratory 2x4 mixed-model ANOVA was conducted to examine the effects of time and group on body dissatisfaction (Table 11). Time (two levels: pre- and post-exposure) was entered as the within-subjects factor, and group (four levels: disclaimer, warning, model control, car control) was entered as the between-subjects factor. Results revealed a significant interaction between time and group,  $F(3, 279) = 5.42, p < .01$ , partial  $\eta^2 = .06$  (Figure 1). These results suggest that the pattern of change in body dissatisfaction was not the same across groups.

Table 11: Summary of Analysis of Variance (ANOVA)

Source	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	Partial $\eta^2$
Tests of Within- Subjects Contrasts					
Group	3039.58	3	1013.20	0.65	.01
Error	437957.17	279	1569.74		
Tests of Between-Subjects Effects					
Time	9.64	1	9.64	0.13	.00
Time x Group	1174.86	3	391.62	5.42**	.06
Error	20176.76	279	72.32		

*Note.* *SS* = Type III Sum of Squares; *df* = degrees of freedom; *MS* = Mean Square;  $\eta^2$  = Eta squared.

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

To further examine the interaction, pairwise comparisons were conducted (Table 12). Results indicated that the difference between pre- versus post-exposure body dissatisfaction was only statistically significant for the car control group. Self-reported body dissatisfaction in this group exhibited a significant decrease from pre- ( $M = 41.05$ ,  $SE = 3.21$ ) to post-exposure ( $M = 36.28$ ,  $SE = 3.49$ ). Although not significant ( $p = .06$ ), there was a directional trend toward an increase in body dissatisfaction from pre- ( $M = 43.49$ ,  $SE = 3.35$ ) to post-exposure ( $M = 46.27$ ,  $SE = 3.64$ ) in the warning group.

Table 12: Pairwise Comparisons for Group by Time Interaction

Group	Mean Difference	SE	95% CI for Difference	
			Lower	Upper
Disclaimer	-0.57	1.46	-3.44	2.31
Warning	2.79	1.47	-0.11	5.68
Model control	1.51	1.39	-1.23	4.24
Car control	-4.77*	1.41	-7.55	-2.00

Note. Mean difference = Time 2 (Post-exposure body dissatisfaction) – Time 1 (pre-exposure body dissatisfaction); SE = standard error; CI = confidence interval.

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

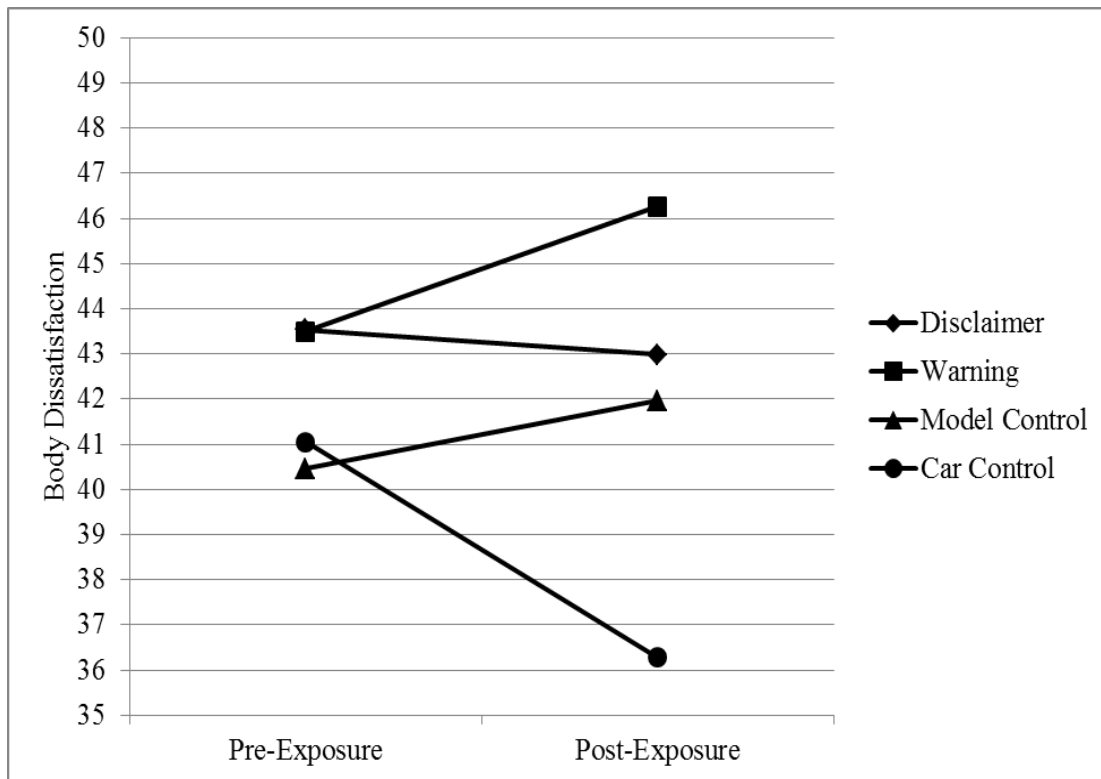


Figure 1: Pre- and post-exposure body dissatisfaction by group.

## Discussion

Over the past few years, pressure on advertising agencies to inform consumers of the digital enhancement of images found in print media via a “health warning” or disclaimer has been building. Government groups championing such changes cite the harmful effects of exposure to media images of hyper-thin models in arguing for either the inclusion of a disclaimer or a complete ban on the use of airbrushing in advertising. Although the effects of media exposure on body dissatisfaction have been documented in numerous correlational and experimental studies (Grabe et al., 2008), there is a dearth of research on the ability of a disclaimer to attenuate the effects. Thus, the current study sought to determine whether the inclusion of a warning versus disclaimer would minimize the immediate effects of exposure to media images of ultra-thin models on body dissatisfaction and intent to diet. Two types of message—disclaimer and warning—were tested, and the potential moderating roles of trait body dissatisfaction, social comparison, and internalization of the thin-ideal were examined. It was hypothesized that participants exposed to advertisements including a warning or disclaimer would report lower levels of post-exposure body dissatisfaction and intent to diet than those exposed to untouched advertisements. It was further hypothesized that the relationship between message condition and body dissatisfaction would be moderated by trait body dissatisfaction, social comparison, and internalization of the thin-ideal.

The hypotheses were not supported by the findings. Only the car control group differed significantly from the disclaimer, warning, and model control groups on post-

exposure body dissatisfaction, after controlling for pre-exposure levels of body dissatisfaction. Participants who were exposed to untouched advertisements of cars reported lower levels of post-exposure body dissatisfaction than participants who were exposed to advertisements featuring ultra-thin models that were either untouched (model control) or edited to include a disclaimer or warning. These results appear to be due to a decrease in body dissatisfaction among participants in the car control group, as illuminated by the exploratory analyses. Although this may not seem intuitive, previous experimental studies have reported similar decreases in body dissatisfaction and/or negative affect following exposure to non-appearance-related advertisements (e.g., Durkin & Paxton, 2002; Heinberg & Thompson, 1995). A possible explanation for this effect was provided by Heinberg and Thompson (1995). When participants enter a lab setting, they do so with a degree of uncertainty as to what is going to be asked of them, whether they are going to be the targets of deception, etc. Once the study is over, participants who perceive the experience to have been relatively benign (i.e., those in the control group) may report an associated improvement in overall mood. As for the lack of significant disclosure effect, it may be that knowledge of airbrushing is more prevalent than expected; perhaps it is not the use of airbrushing, but the degree to which advertisements are altered that needs to be communicated.

Similarly null results were found for the second outcome variable, intent to diet. Since dieting behaviors were not measured pre-exposure, there is no way to determine whether such behaviors increased following the manipulation; however, results suggest that the groups did not differ significantly on intentions to diet, whether they were exposed to untouched, edited, or model-free advertisements. In previous studies,

exposure to hyper-thin media images has been linked to both greater endorsement of disordered eating-related beliefs and attitudes in college-aged women (Hawkins, Richards, Granley, & Stein, 2004) and decreased thoughts of dieting in “body dissatisfied” women (Leahey & Crowther, 2008). In studies involving taste tests, participants exposed to images of thin models tend to consume fewer calories than those exposed to images of heavier models or model-free images (e.g., Strahan et al., 2007).

Results from the moderator analyses did not support the role of trait body dissatisfaction, social comparison, or thin-ideal internalization as moderators of the relationship between exposure and body dissatisfaction. These findings are inconsistent with previous study findings that support the moderating roles of trait body dissatisfaction (e.g., Posavac, Posavac, & Posavac, 2008) and social comparison and internalization of the thin-ideal (e.g., Dittmar & Howard, 2004), whereby higher levels are associated with increased vulnerability to the negative effects of exposure to idealized media images. The lack of significant moderators in the current study may be due to insufficient power.

### **Limitations**

Although this was one of the first studies to examine the ability of a disclosure to decrease the acute effects of media exposure on body dissatisfaction, it was not without limitations. First, the generalizability of the results is limited due to the nature of the sample (all female, undergraduate students). As noted by Leahey and Crowther (2008), however, college-aged females have been shown to have high levels of body dissatisfaction; this fact may justify their use in the current study.

Second, despite the large sample size ( $N = 283$ ), the study may be underpowered. Meta-analytic results indicate that the effect of exposure to thin media images on body dissatisfaction and eating behaviors are small (i.e.,  $d = -0.28$ ,  $d = -0.30$ , respectively; Grabe et al., 2008). In fact, a more recent—albeit unpublished—meta-analysis including only experimental studies (with a control group) suggests that the effect on body dissatisfaction may be as small as  $d = 0.03$  (positive direction signifies decrease in body satisfaction post-exposure) and not very robust (Hausenblas et al., 2011). It is possible that a larger sample size may have been required to detect it.

Third, although it allowed for increased experimental control, the fact that the study was conducted in a laboratory setting could also be viewed as a limitation. Participants were exposed to advertisements devoid of context (i.e., removed from magazines, scanned, and inserted into a slideshow). Further, given the rating task associated with the exposure, participants may have been viewing the advertisements and processing them in a manner unlike they would in their everyday lives (Tiggemann et al., 2009).

Fourth, this study was designed to determine whether inclusion of a warning versus disclaimer would minimize the immediate effects of exposure on body dissatisfaction; results do not provide any information as to the long-term effects of such exposure. Longitudinal research with adolescent girls suggests that exposure to thin media images may have long-term adverse effects for those with preexisting vulnerabilities (e.g., high levels of trait body dissatisfaction; Stice, Spangler, & Agras, 2001).



Finally, and perhaps most importantly, the study was predicated on an increase in body dissatisfaction in the model control group, which did not occur. These findings are inconsistent with studies that found significant negative group effects of viewing ultra-thin media images (e.g., Birkeland et al., 2005; Halliwell & Dittmar, 2004; Hawkins et al., 2004; Tiggemann et al., 2009), but consistent with a smaller group of studies that did not (e.g., Halliwell, Dittmar, & Howe, 2005; Irving, 1990). The lack of significant change in body dissatisfaction among the model control group may be attributable to the daily bombardment of participants with such images—does the fact that they are not novel stimuli somehow dilute the effect?

The lack of a significant increase in body dissatisfaction in the control group may also be attributable to the method of exposure. Although the stimuli were limited to 5, as per meta-analytic results indicating that the effect decreases as the number of stimuli approaches 10, it is possible that the ideal number of stimuli may have been closer to 10 (e.g., 7 or 8). Further, the stimuli were rated and approved by a panel of expert body image researchers specifically for use in this study. Permission to use a pre-tested set of images could have been considered. Tiggemann and colleagues (2009), for example, used stimulus materials initially created by the first author for another study (Tiggemann & McGill, 2004). It may also be the case that stimuli presented in video form (e.g., as TV commercials) are more salient than those taken from print media, although media type (e.g., magazine versus television) was not found to be a significant moderator in the most recent meta-analysis published on the topic (Grabe et al., 2008). It is also possible that the task of rating the advertisements—on strictly non-model-related criteria—did not require the type of processing necessary to illicit negative body-related thoughts or

feelings. In a study by Tiggemann and colleagues (2009), participants were exposed to images of thin models and instructed to rate their level of agreement with statements that either forced the participant to compare herself to the model (e.g., “I would like my body to look like this woman’s body.”) or imagine what it would be like the model (e.g., “It would be great fun to be this woman.”). The social comparison instructional set was associated with greater negative affect and body dissatisfaction, whereas the fantasy instructional set was associated with greater positive affect. Thus, they concluded that “instructions may be just as crucial as image type in determining resulting mood and body dissatisfaction” (Tiggemann et al., 2009, p. 87).

### **Future Directions**

It is prudent that major policy changes be informed by additional research in the area. Findings from previous studies suggest that individuals with higher baseline levels of body dissatisfaction are at greater risk for the negative effects of exposure to idealized media images (e.g., Posavac et al., 1998). In fact, meta-analytic results suggest that the effect size increases from  $d = -0.10$  for women without a history of body dissatisfaction to  $d = -0.50$  for women who already harbor negative feelings about their bodies (Groesz et al., 2002). Future studies should seek to target an at-risk population to determine whether the efficacy of a warning versus disclaimer is similarly moderated by such variables.

Researchers should also attempt to target a younger population. Adolescents, for example, are particularly vulnerable to body dissatisfaction and related negative outcomes (Ata, Rojas, Ludden, & Thompson, 2011). In a study comparing the effects of fashion magazines on body dissatisfaction among adolescent and adult females, the

former tended to report higher levels of post-exposure body dissatisfaction (Shaw, 1995). Following a significant effect of a warning or disclaimer, researchers in the field should seek to explore potential mechanisms of change. Decreased state appearance comparison (i.e., the degree to which a participant compared her physical appearance to that of the models over the study period), for example, may be responsible for decreased body dissatisfaction in groups exposed to advertisements informing them that the model's appearance has been enhanced digitally and is, therefore, not a realistic target of comparison. In contrast, highlighting the fact that even models must undergo airbrushing to be deemed sufficiently attractive may increase participants' reported levels of body dissatisfaction and negative affect. This may explain the trend in the current study toward increasing body dissatisfaction in the warning group; additional research is needed to explore this tentative finding. Feedback from focus groups may prove useful in determining how the messages are actually being perceived.

While this study only sought to examine changes in body dissatisfaction over time, previous studies have linked viewing of thin media images with increased negative affect in both adolescent girls (e.g., Durkin & Paxton, 2002) and college-aged women (e.g., Birkeland et al., 2005; Hawkins et al., 2004). It would be interesting to determine whether the inclusion of a warning versus disclaimer would significantly decrease such effects. Additional analyses of the data from the current study may shed light on this matter.

Finally, efforts should continue to be made to shift the appearance of the "typical" model. Recent research seeking to examine the link between model size and the effectiveness of advertisements found that it is attractiveness, not size, that matters

(Halliwell & Dittmar, 2004). Women exposed to advertisements featuring either thin models, average-size models (i.e., U.S. size 12/U.K. size 14), or no models, rated the advertisements as equally effective (Halliwell & Dittmar, 2004), suggesting that the advertising agencies' argument that only thinness sells is not being driven by consumer perceptions. In fact, qualitative research conducted in Australia suggests that college-aged men and women (17 – 25 years-old) would like to see more realistic models in the media (Diedrichs et al., 2011). Despite barriers stemming from the stigmatization of obesity (Diedrichs et al., 2011), the inclusion of normal weight models in advertising may be a more comprehensive public health intervention than merely labeling advertisements as having been “retouched.”

### **Implications and Conclusions**

Despite its shortcomings, the current study makes an important contribution to the controversy surrounding the use of warnings and disclaimers in advertising. To my knowledge, it is one of the first studies to examine it experimentally. Results suggest that inclusion of a disclaimer or warning does not have an effect on post-exposure body dissatisfaction in college-aged women and, in the case of the warning, may even serve to increase negative, body-related thoughts and feelings. Before additional time and money is spent trying to change advertising policy, research must support the utility of such disclosures in decreasing the harmful effects of exposure to idealized media images.

The thin-ideal is so engrained within our society that a disclaimer may not be potent enough to attenuate the negative effects of exposure to representative images. While informing consumers of the digital alteration of models in advertisements may be a step in the right direction, only time (and future research) will tell. Until then,

community and governmental efforts, as well as funding, should be devoted to implementing empirically-supported prevention and intervention strategies. Even brief media literacy sessions have proven efficacious (Posavac et al., 2001) and can easily be integrated into school curricula. Such wide-spread dissemination of media literacy training will empower individuals to question and critique ideals of attractiveness portrayed by the media, thereby creating active, critical consumers armed with the skills and knowledge necessary to ward off their potential negative effects.

## References

- Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Thousand Oaks, CA: Sage Publications.
- Alcoholic Beverage Labeling Act of 1988, H.R. 5409, Pub. L. No. 100-690.
- Alfano, S. (2006, September 18). *Super-thin models: Controversy grows: Spanish fashion show bans them; British counterpart doesn't*. Retrieved from <http://www.cbsnews.com>
- American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: American Psychological Association.
- Anschutz, D. J., Van Strien, T., & Engels, R. C. M. E. (2011). Exposure to slim images in mass media: Television commercials as reminders of restriction in restrained eaters. *Psychology of Popular Media Culture, 1*, 48 – 59.
- Argo, J. J., & Main, K. J. (2004). Meta-analyses of the effectiveness of warning labels. *Journal of Public Policy and Marketing, 23*, 193 – 208.
- Ata, R. N., Rojas, A., Ludden, A. B., & Thompson, J. K. (2011). Factors influencing body image during adolescence. In V. R. Preedy, R. R. Watson, & C. R. Martin (Eds.), *Handbook of behavior, food and nutrition*. New York: Springer.
- Australian Government. (2009). *A proposed national strategy on body image*. Retrieved from <http://apo.org.au/node/19505>
- Barlow, T., & Wogalter, M. S. (1993). Alcoholic beverage warnings in magazine and television advertisements. *Journal of Consumer Research, 20*, 147 – 156.

- Beltramini, R. F. (1988). Perceived believability of warning label information presented in cigarette advertising. *Journal of Advertising*, 17, 26 – 32.
- Biehal, G., & Chakravarti, D. (1982). Information-presentation format and learning goals as determinants of consumers' memory retrieval and choice processes. *Journal of Consumer Research*, 8, 431- 441.
- Birkeland, R., Thompson, J. K., Herbozo, S., Roehrig, M., Cafri, G., & van den Berg, P. (2005). Media exposure, mood, and body image dissatisfaction: An experimental test of person versus product priming. *Body Image*, 2, 53 – 61.
- Botta, R. (1999). Television images and adolescent girls' body image disturbance. *Journal of Communication*, 49, 22 – 41.
- Boyer, V., Ameline, N., Beaudouin, P., Bignon, J., Blum, R., Bouchet, J.-C., . . . Zimmermann, M.-J. (2009). *Proposed law on photographs of retouched body images*. Retrieved from <http://www.assemblee-nationale.fr/13/propositions/pion1908.asp>
- Brown, T. A., Cash, T. F., & Mikulka, P. J. (1990). Attitudinal body-image assessment: Factor analysis of the Body-Self Relations Questionnaire. *Journal of Personality Assessment*, 55, 135 – 144.
- Champion, H., & Furnham, A. (1999). The effect of the media on body satisfaction in adolescent girls. *European Eating Disorders Review*, 7, 213 – 228.
- CNN World News. (2006, September 13). *Skinny models banned from catwalk*. Retrieved from <http://www.cnn.com>
- Collins, L. (2008, May 12). Pixel perfect: Pascal Danguin's virtual reality. *The New Yorker*. Retrieved from <http://www.newyorker.com>

- Coughlin, J. W., & Kalodner, C. (2006). Media literacy as a prevention intervention for college women at low- or high-risk for eating disorders. *Body Image, 3*, 35 – 43.
- Cusumano, D. L., & Thompson, J. K. (1997). Body image and body shape ideals in magazines: Exposure, awareness and internalization. *Sex Roles, 37*, 701 – 721.
- Dalley, S. E., Buunk, A. P., & Umit, T. (2009). Female body dissatisfaction after exposure to overweight and thin media images: The role of body mass index and neuroticism. *Personality and Individual Differences, 47*, 47 – 51.
- Diedrichs, P. C., Lee, C., & Kelly, M. (2011). Seeing the beauty in everyday people: A qualitative study of young Australians' opinions on body image, the mass media and models. *Body Image, 8*, 259 – 266.
- Dittmar, H., Halliwell, E., Tiggemann, M., Levine, M., Diedrichs, P., Rumsey, N., . . . Bell, B. T. (2009). *The impact of media images on body image and behaviours: A summary of the scientific evidence*. Retrieved from <http://www.nationaleatingdisorders.org>
- Dittmar, H., & Howard, S. (2004). Thin-ideal internalization and social comparison tendency as moderators of media models' impact on women's body-focused anxiety. *Journal of Social and Clinical Psychology, 23*, 768 – 791.
- Durkin, S. J., & Paxton, S. J. (2002). Predictors of vulnerability to reduced body image satisfaction and psychological wellbeing in response to exposure to idealized female images in adolescent girls. *Journal of Psychosomatic Research, 53*, 995 – 1005.



- Engeln-Maddox, R. (2005). Cognitive responses to idealized media images of women: The relationship of social comparison and critical processing to body image disturbance in college women. *Journal of Social and Clinical Psychology, 24*, 1114 – 1138.
- Erlanger, S. (2009, December 2). Point, shoot, retouch and label? *The New York Times*. Retrieved from <http://www.nytimes.com>
- Festinger, L. (1954). A theory of social comparison processes. *Human Relations, 7*, 117 – 140.
- Field, A. E., Cheung, L., Wolf, A. M., Herzog, D. B., Gortmaker, S. L., & Colditz, G. A. (1999). Exposure to the mass media and weight concerns among girls. *Pediatrics, 103*, E36.
- Fisher, P. M., Richards, J. W., Berman, E. J., & Krugman, D. M. (1989). Recall and eye tracking study of adolescents viewing tobacco advertisements. *Journal of the American Medical Association, 261*, 84 – 89.
- Garner, D. M., Garfinkel, P. E., Schwartz, D., & Thompson, M. (1980). Cultural expectations of thinness in women. *Psychological Reports, 47*, 483 – 491.
- Grabe, S., Ward, L. M., & Hyde, J. S. (2008). The role of media in body image concerns among women: A meta-analysis of experimental and correlational studies. *Psychological Bulletin, 134*, 460 – 476.
- Groesz, L.M., Levine, M.P., & Murnen, S.K. (2002). The effect of experimental presentation of thin media images on body satisfaction: A meta-analytic review. *International Journal of Eating Disorders, 31*, 1 – 16.

- Halliwell, E., & Dittmar, H. (2004). Does size matter? The impact of model's body size on women's body-focused anxiety and advertising effectiveness. *Journal of Social and Clinical Psychology, 23*, 104 – 122.
- Halliwell, E., Dittmar, H., & Howe, J. (2005). The impact of advertisements featuring ultra-thin or average-size models on women with a history of eating disorders. *Journal of Community & Applied Social Psychology, 15*, 406 – 413.
- Hamilton, E. A., Mintz, L., & Kashubeck-West, S. (2007). Predictors of media effects on body dissatisfaction in European American women. *Sex Roles, 56*, 397 – 402.
- Hammond, D., Fong, G. T., Borland, R., Cummings, M., McNeill, A., & Driezen, P. (2007). Text and graphic warnings on cigarette packages: Findings from the International Tobacco Control Four Country Study. *American Journal of Preventive Medicine, 32*, 202 – 209.
- Harper, B., & Tiggemann, M. (2008). The effect of thin ideal media images on women's self-objectification, mood, and body image. *Sex Roles, 58*, 649 – 657.
- Hassan, L. M., Shiu, E., Thrasher, J. F., Fong, G. T., & Hastings, G. (2008). Exploring the effectiveness of cigarette warnings labels: Findings from the United States and United Kingdom arms of the International Tobacco Control (ITC) Four Country Survey. *International Journal of Nonprofit and Voluntary Sector Marketing, 13*, 263 – 274.
- Hausenblas, H. A., Campbell, A., Menzel, J. E., Doughty, J., Levine, M. P., & Thompson, J. K. (2011). *Media effects of experimental presentation of the ideal physique on eating disorder symptoms: A meta-analysis of laboratory studies*. Unpublished manuscript.

- Hawkins, N., Richards, P. S., Granley, H. M., & Stein, D. M. (2004). The impact of exposure to the thin-ideal media image on women. *Eating Disorders, 12*, 35 – 50.
- Heinberg, L. J. (1996). Theories of body image disturbance: Perceptual, developmental, and sociocultural factors. In J. K. Thompson (Ed.), *Body image, eating disorders, and obesity: An integrative guide for assessment and treatment* (pp. 27 – 47). Washington, DC: American Psychological Association.
- Heinberg, L. J., & Thompson, J. K. (1995). Body image and televised images of thinness and attractiveness: A controlled laboratory investigation. *Journal of Social and Clinical Psychology, 14*, 325 – 338.
- Heymann, L. A. (2010). Reading the product: Warnings, disclaimers, and literacy theory. *Yale Journal of Law and Humanities, 22*, 393 – 415.
- Holmstrom, A. J. (2004). The effects of the media on body image: A meta-analysis. *Journal of Broadcasting & Electronic Media, 48*, 196 – 217.
- Hough, A. (2010, June 18). Revealed: Secretes of airbrushing as Debenhams bans controversial practice. *Telegraph*. Retrieved from <http://www.telegraph.co.uk>
- Irving, L. M. (1990). Mirror image: Effects of the standard of beauty on the self- and body-esteem of women exhibiting varying levels of bulimic symptoms. *Journal of Social and Clinical Psychology, 9*, 230 – 242.
- Irving, L. M., & Berel, S. R. (2001). Comparison of media-literacy programs to strengthen college women's resistance to media images. *Psychology of Women Quarterly, 25*, 103 – 111.

- Juarascio, A. S., Perone, J., & Timko, C. A. (2011). Moderators of the relationship between body image dissatisfaction and disordered eating. *Eating Disorders, 19*, 346 – 354.
- Kazdin, A. E. (2003). *Research design in clinical psychology* (4th ed.). Boston: Allyn & Bacon.
- Kearney-Cooke, A. (1994). Familial influences on body image development. In T. F. Cash, & T. Pruzinsky (Eds.), *Body image: A handbook of theory, research, and clinical practice* (pp. 99 – 107). New York: The Guilford Press.
- Keery, H., van den Berg, P., & Thompson, J. K. (2004). An evaluation of the tripartite influence model of body dissatisfaction and eating disturbance with adolescent girls. *Body Image, 1*, 237 – 251.
- Kilbourne, J. (1999). *Can't buy my love: How advertising changes the way we think and feel*. New York: Touchstone.
- Kraemer, H., Kazdin, A., Offord, D., Kessler, R., Jensen, P., & Kupler, D. (1997). Coming to terms with the terms of risk. *Archives of General Psychiatry, 54*, 337-343.
- Krahé, B., & Krause, C. (2010). Presenting thin media models affects women's choice of diet or normal snack. *Psychology of Women Quarterly, 34*, 349 – 355.
- Leahey, T. M., & Crowther, J. H. (2008). An ecological momentary assessment of comparison target as a moderator of the effects of appearance-focused social comparisons. *Body Image, 5*, 307 – 311.

- Leahey, T. M., Crowther, J. H., & Mickelson, K. D. (2007). The frequency, nature, and effects of naturally occurring appearance-focused social comparisons. *Behavior Therapy, 38*, 132 –143.
- LePage, M. L., Crowther, J. H., Harrington, E. F., & Engler, P. (2008). Psychological correlates of fasting and vigorous exercise as compensatory strategies in undergraduate women. *Eating Behaviors, 9*, 423 – 429.
- Levine, M. P., & Murnen, S. K. (2009). “Everybody knows that the mass media are/are not [pick one] a cause of eating disorders:” A critical review of evidence for a causal link between media, negative body image, and disordered eating in females. *Journal of Social and Clinical Psychology, 28*, 9 – 42.
- Levine, M. P., Piran, N., & Stoddard, C. (1999). Mission more probable: Media literacy, activism, and advocacy in the prevention of eating disorders. In N. Piran, M. P. Levine, & C. Steiner-Adair (Eds.), *Preventing eating disorders: A handbook of interventions and special challenges* (pp. 3 – 25). Philadelphia: Brunner/Mazel.
- Lew, A., Mann, T., Myers, H., Taylor, S., & Bower, J. (2007). Thin-ideal media and women’s body dissatisfaction: Prevention using downward social comparisons on non-appearance dimensions. *Sex Roles, 57*, 543 – 556.
- Liberal Democrats (2009a, September 19). *Policy motion: Real women (women policy paper)- carried*. Retrieved from <http://www.libdems.org.uk/>
- Liberal Democrats (2009b, December 15). *ASA bans ‘misleading’ Twiggy advert says Swinson* [Press Release]. Retrieved from <http://www.libdems.org.uk/>

- Lyubomirsky, S., & Nolen-Hoeksema, S. (1995). Effects of self-focused rumination on negative thinking and interpersonal problem solving. *Journal of Personality and Social Psychology*, 69, 176 – 190.
- Major, B., Testa, M., & Blysm, W. H. (1991). Responses to upward and downward social comparisons: The impact of esteem-relevance and perceived control. In J. Suls, & Wills, T. A. (Eds.), *Social comparison: Contemporary theory and research* (pp. 237 – 260). Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.
- Martin, M. C., & Kennedy, P. F. (1993). Advertising and social comparison: Consequences for female preadolescents and adolescents. *Psychology & Marketing*, 10, 513 – 530.
- McCabe, M. P., & Ricciardelli, L. A. (2003). Body image and strategies to lose weight and increase muscle among boys and girls. *Health Psychology*, 22, 39 – 46.
- McVey, G., & Davis, R. (2002). A program to promote positive body image: A 1-year follow-up evaluation. *The Journal of Early Adolescence*, 22, 96 – 108.
- Mills, J. S., Polivy, J., Herman, C. P., & Tiggemann, M. (2002). Effects of exposure to thin media images: Evidence of self-enhancement among restrained eaters. *Personality and Social Psychology Bulletin*, 28, 1687 – 1699.
- Morrow, J., & Nolen-Hoeksema, S. (1990). Effects of responses to depression on the remediation of depressive affect. *Journal of Personality and Social Psychology*, 58, 519 – 527.
- Myers, T. A., & Crowther, J. H. (2009). Social comparison as a predictor of body dissatisfaction: A meta-analytic review. *Journal of Abnormal Psychology*, 118, 683 – 698.

- National Eating Disorders Association (2011, June 14). *'Kudos to Yoplait,' says National Eating Disorders Association: Company agrees to remove troubling advertising campaign from the air* [Press release]. Retrieved from <http://www.nationaleatingdisorders.org>
- Nichter, M., & Nichter, M. (1991). Hype and weight. *Medical Anthropology, 13*, 249 – 284.
- Ogden, J., & Sherwood, F. (2008). An evaluation of the effectiveness of an air-brushing educational intervention on body dissatisfaction. *Health Education, 108*, 489 – 500.
- O'Hegarty, M., Pederson, L. L., Nelson, D. E., Mowery, P., Gable, J. M., & Wortley, P. (2006). Reactions of young adult smokers to warning labels on cigarette packets. *American Journal of Preventive Medicine, 30*, 467 – 473.
- Polivy, J., & Herman, C. P. (1987). Diagnosis and treatment of normal eating. *Journal of Consulting and Clinical Psychology, 5*, 635 – 644.
- Polivy, J., & Herman, C. P. (1995). Dieting and its relation to eating disorders. In K. D. Brownell & C. G. Fairburn (Eds.), *Eating disorders and obesity: A comprehensive handbook*. New York: Guilford.
- Posavac, H., Posavac, S., & Posavac, E. (1998). Exposure to media images of female attractiveness and concern with body weight among young women. *Sex Roles, 38*, 187–201.
- Posavac, H. D., Posavac, S. S., & Weigel, R. G. (2001). Reducing the impact of media images on women at risk for body image disturbance: Three targeted interventions. *Journal of Social and Clinical Psychology, 20*, 324 – 340.

- Ridolfi, D. R., & Vander Wal, J. S. (2008). Eating Disorders Awareness Week: The effectiveness of a one-time body image dissatisfaction prevention session. *Eating Disorders, 16*, 428 – 443.
- Roberts, D. F. (2000). Media and youth: Access, exposure, and privatization. *Journal of Adolescent Health, 27*, 8 – 14.
- Rodin, J., Silberstein, L., & Striegel-Moore, R. (1984). Women and weight: A normative discontent. *Nebraska Symposium on Motivation, 32*, 267 – 307.
- Roehrig, M., Thompson, J. K., & Cafri, G. (2008). Effects of dieting-related messages on psychosocial and weight control variables. *International Journal of Eating Disorders, 41*, 164 – 173.
- Rosen, J. C. (1992). Body-image disorder: Definition, development, and contribution to eating disorders. In J. H. Crowther, D. L. Tennenbaum, S. E. Hobfoll, & M. A. Stephens (Eds.), *The etiology of bulimia nervosa: The individual and familial context* (pp. 157–177). Washington, DC: Hemisphere Publishing.
- Seddon, L., & Berry, N. (1996). Media-induced disinhibition of dietary restraint. *British Journal of Health Psychology, 1*, 27-33.
- Shaw, J. (1995). Effects of fashion magazines on body dissatisfaction and eating psychopathology in adolescent and adult females. *European Eating Disorders Review, 3*, 15 – 23.
- Shroff, H., & Thompson, J. K. (2006). The tripartite influence model of body image and eating disturbance: A replication with adolescent girls. *Body Image, 3*, 17 – 23.



- Silverstein, B., Perdue, L., Peterson, B., & Kelly, E. (1986). The role of the mass media in promoting a thin standard of bodily attractiveness for women. *Sex Roles, 14*, 519 – 532.
- Smolak, L., & Thompson, J. K. (Eds.) (2009). *Body image, eating disorders, and obesity in youth: Assessment, prevention, and treatment* (2nd ed.). Washington, DC: American Psychological Association.
- Sperry, S., Thompson, J. K., Roehrig, M., & Vandello, J. (2005). The influence of communicator weight on psychoeducational messages acceptance in females with high vs. low levels of body image disturbance. *Eating Behaviors, 6*, 247 – 258.
- Steinberg, A. R., Phares, V., & Thompson, J. K. (2004). Gender differences in peer and parental influences: Body image disturbance, self-worth, and psychological functioning in preadolescent children. *Journal of Youth and Adolescence, 33*, 421 – 429.
- Stice, E. (2002). Risk and maintenance factors for eating pathology: A meta-analytic review. *Psychological Bulletin, 128*, 825-848.
- Stice, E., & Bearman, S. K. (2001). Body-image and eating disturbances prospectively predict increases in depressive symptoms in adolescent girls: A growth curve analysis. *Developmental Psychology, 37*, 597 – 607.
- Stice, E., Schupak-Neuberg, E., Shaw, H. E., & Stein, R. I. (1994). Relation of media exposure to eating disorder symptomatology: An examination of mediating mechanisms. *Journal of Abnormal Psychology, 103*, 836 – 840.

- Stice, E., Spangler, D., & Agras, W. S. (2001). Exposure to media-portrayed thin-ideal images adversely affects vulnerable girls: A longitudinal experiment. *Journal of Social and Clinical Psychology, 20*, 270 – 288.
- Stormer, S. M., & Thompson, J. K. (1995, November). *The effect of media images and sociocultural beauty ideals on college-age women: A proposed psychoeducational program*. Paper presented at the meeting of the Association for the Advancement of Behavior Therapy, New York.
- Stormer, S. M., & Thompson, J. K. (1996). Explanations of body image disturbance: A test of maturational status, negative verbal commentary, social comparison, and sociocultural hypotheses. *International Journal of Eating Disorders, 19*, 193 – 202.
- Stormer, S. M., & Thompson, J. K. (1998, November). Challenging media messages regarding appearance: A psychoeducational program for males and females. Paper presented at the meeting of the Association for the Advancement of Behavior Therapy, Washington, DC.
- Strahan, E. J., Spencer, S. J., & Zanna, M. P. (2007). Don't take another bite: How sociocultural norms for appearance affect women's eating behavior. *Body Image, 4*, 331 – 342.
- Strasburger, V., & Wilson, B. (2002). *Children, adolescents, and the media*. Thousand Oaks, CA: Sage Publications.
- Strauss, J., Doyle, A. E., & Kreipe, R. (1994). The paradoxical effect of diet commercials on reinhibition of dietary restraint. *Journal of Abnormal Psychology, 103*, 441 – 444.

- Sweney, M. (2009, December 16). Twiggy's Olay ad banned over airbrushing. *The Guardian*. Retrieved from <http://www.guardian.co.uk>
- Sypeck, M. F., Gray, J. J., & Ahrens, A. H. (2004). No longer just a pretty face: Fashion magazines' depiction of ideal female beauty from 1959 to 1999. *International Journal of Eating Disorders*, 36, 342 – 347.
- Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics* (5th ed.). Boston: Allyn and Bacon.
- Telegraph Media Group. (2009, September 21). French MPs want health warnings on airbrushed photographs. *Telegraph*. Retrieved from <http://www.telegraph.co.uk>
- Thompson, J. K. (2004). The (mis)measurement of body image: Ten strategies to improve assessment for applied and research purposes. *Body Image*, 1, 7 – 14.
- Thompson, J. K., & Heinberg, L. J. (1999). The media's influence on body image disturbance and eating disorders: We've reviled them, now can we rehabilitate them? *Journal of Social Issues*, 55, 339 – 353.
- Thompson, J. K., Heinberg, L. J., Altabe, M., & Tantleff-Dunn, S. (1999). *Exacting beauty: Theory, assessment, and treatment of body image disturbance*. Washington: American Psychological Association.
- Thompson, J. K., Heinberg, L., & Tantleff, S. (1991). The Physical Appearance Comparison Scale. *The Behavior Therapist*, 14, 174.
- Thompson, J. K., Herbozo, S. M., Himes, S. M., & Yamamiya, Y. (2005). Weight-related teasing in adults. In Brownell, K. D., Puhl, R. M., Schwartz, M. B., Rudd, L. (Eds.), *Weight bias: Nature, consequences, and remedies* (pp. 137 – 149). New York: Guilford Press.

- Thompson, J. K., & Smolak, L. (Eds.) (2001.) *Body image, eating disorders, and obesity in youth: Assessment, prevention, and treatment*. Washington, DC: American Psychological Association.
- Thompson, J. K., van den Berg, P., Roehrig, M., Guarda, A. S., & Heinberg, L. J. (2004). The Sociocultural Attitudes Towards Appearance Scale-3 (SATAQ-3): Development and validation. *International Journal of Eating Disorders*, 35, 293 – 304.
- Thomsen, S. R., & Fulton, K. (2007). Adolescents' attention to responsibility messages in magazine alcohol advertisements: An eye-tracking approach. *Journal of Adolescent Health*, 41, 27 – 34.
- Tiggemann, M., Polivy, J., & Hargreaves, D. (2009). The processing of thin ideals in fashion magazines: A source of social comparison or fantasy? *Journal of Social and Clinical Psychology*, 28, 73 – 93.
- Tiggemann, M., & McGill, B. (2004). The role of social comparison in the effect of magazine advertisements on women's mood and body dissatisfaction. *Journal of Social and Clinical Psychology*, 23, 23 – 44.
- Torres, I. M., Sierra, J. J., & Heiser, R. S. (2007). The effects of warning-labels placement in print ads. *Journal of Advertising*, 36, 49 – 62.
- van den Berg, P., Thompson, J. K., Obremski-Brandon, K., & Coover, M. (2002). The tripartite influence model of body image and eating disturbance: A covariate structure modeling investigation testing the mediational role of appearance comparison. *Journal of Psychosomatic Research*, 53, 1007 – 1020.

- van den Berg, P., Paxton, S. J., Keery, H., Wall, M., Guo, J., & Neumark-Sztainer, D. (2007). Body dissatisfaction and body comparison with media images in males and females. *Body Image, 4*, 257 – 268.
- Van Strien, T., Frijters, J. E. R., Bergers, G. P. A., & Defares, P. B. (1986). The Dutch Eating Behavior Questionnaire (DEBQ) for assessment of restrained, emotional, and external eating behavior. *International Journal of Eating Disorders, 5*, 295 – 315.
- Watson, R., & Vaughn, L. M. (2006). Limiting the effects of the media on body image: Does the length of a media literacy intervention make a difference? *Eating Disorders, 14*, 385 – 400.
- Weaver, A. D., & Byers, E. S. (2006). The relationships among body image, body mass index, exercise, and sexual functioning in heterosexual women. *Psychology of Women Quarterly, 30*, 333 – 339.
- Wilson, E. (2007, January 6). Health guidelines suggested for models. *The New York Times*. Retrieved from <http://www.nytimes.com>
- Wiseman, C. V., Gray, J., Moismann, J., & Ahrens, A. H. (1992). Cultural expectations of thinness in women: An update. *International Journal of Eating Disorders, 11*, 85 – 89.
- Yamamiya, Y., Cash, T. F., Melnyk, S. E., Posavac, H. D., & Posavac, S. S. (2005). Women's exposure to thin-and-beautiful media images: Body image effects of media-ideal internalization and impact-reduction interventions. *Body Image, 2*, 74 – 80.

Zacharakis, Z. (2009, October 5). German magazine swaps thin models for real women.

*The Washington Times*. Retrieved from <http://www.washingtontimes.com>.